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RECORD LINKAGE OF CENSUS AND MORTALITY 2001-04 RECORDS:

New Zealand Census-Mortality Study Technical Report No.6

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Finally, there is a larger team of researchers and co-investigators involved with the development of the NZCMS 2001 cohort than those who authored this report.

Executive Summary

Linkage of 2001-04 mortality records to 2001 census

- Overall, 81.5% of eligible mortality records (all ages) in the three years after the 2001 census were linked back to a 2001 census record (67,146 linked pairs).
- We estimated that over 97% of these linked pairs were correct linkages.
- Mortality records were less likely to be linked to a census record if: age 25-34 years; external cause of death; north of North Island; Pacific and Asian (and to lesser extent Māori) ethnicity compared to European/Other. Accordingly, we calculated linkage weights to 'weight up' the linked pairs to be representative of all eligible mortality records.
- Importantly, linkage success did not notably decrease with increasing time after census – probably a function of greater geocode information available than with previous NZCMS linkages.

Numerator-Denominator bias: comparing ethnic counts on mortality data with that on census data

- Previously, we have found that Māori and Pacific deaths are grossly undercounted (and European/Other overcounted) on mortality data relative to census data, till the mid-1990s at least.
- We created a limited data set of highly probable census-mortality links, and used weighted analyses of these to compared ethnicity recorded on mortality and census files.
- There were negligible differences between mortality and census data in the number of Māori, Pacific, Asian and European/Other people enumerated using *total ethnicity* concept. This is good news for the health sector, demonstrating that the change in the ethnicity question on the deah registration form, and other activities to encourage accurate ethnicity recording by undertakers, has been largely successful. However, it should be noted that much fewer mortality records had two or more self-identified ethnic groups compared to the linked census data.

Recommendations

The lack of fall off in the linkage success of mortality records with increasing time since census night suggests that linking all five years of mortality data post census night to the prior census is feasible. This would have several advantages:

- Increased numbers for analyses
- Full coverage over time for improved monitoring (e.g. data points could be constructed by 2.5 year intervals, or even yearly intervals)
- Increased timeliness of monitoring information (e.g. rates for the 2004-06 period could be ready in 2010, rather than waiting to 2012 for 2006-09 rates)
- A simpler study design.

The key disadvantages to linking five years of mortality data back to census data are an increased effort, and some marginal increase in cost (although this would be small if each census was only linked once to the complete five years of mortality data).

We recommend that the Ministry of Health and the NZCMS lead investigators opt for one of the options below:

1. Link 2004-06 mortality to 2001 census as soon as possible and report findings. Then undertake linkage of mortality data to census data and reporting of trends in inequalities every 2.5 years thereafter. (This option involves two linkage projects for each census.)
2. Link 2004-06 mortality to 2001 census as soon as possible and report findings. Then undertake linkage of mortality data to census data and reporting of trends in inequalities every 5 years thereafter. (This option involves only one linkage projects for each census, but also means results for each census-cohort will not be available until 8 or so years after the baseline census date).
3. Proceed as per previously (i.e. just link 3 years of mortality data back to each census.)

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Statistics New Zealand Security Statement

The New Zealand Census-Mortality Study was initiated by Professor Tony Blakely and his co-researchers from the Wellington School of Medicine, University of Otago. It was approved by the Government Statistician as a Data Laboratory project under the Microdata Access Protocols.

Requirements of the Statistics Act

Under the Statistics Act 1975 the Government Statistician has legal authority to collect and hold information about people, households and businesses, as well as the responsibility of protecting individual information and limits to the use to which such information can be put. The obligations of the Statistics Act 1975 on data collected under the Act are summarised below.

1. Information collected under the Statistics Act 1975 can be used only for statistical purposes.

2. No information contained in any individual schedule is to be separately published or disclosed to any person who is not an employee of Statistics New Zealand, except as permitted by sections 21(3B), 37A, 37B and 37C of the Act.

3. This project was carried out under section 21(3B). Under Section 21(3B) the Government Statistician requires an independent contractor under contract to Statistics New Zealand, and any employee of the contractor, to make a statutory declaration of secrecy similar to that required of Statistics New Zealand employees where they will have access to information collected under the Act. For the purposes of implementing the confidentiality provisions of the Act, such contractors are deemed to be employees of Statistics New Zealand.

4. Statistical information published by Statistics New Zealand, and its contracted researchers, shall be arranged in such a manner as to prevent any individual information from being identifiable by any person (other than the person who supplied the information), unless the person owning the information has consented to the publication in such manner, or the publication of information in that manner could not reasonably have been foreseen.

5. The Government Statistician is to make office rules to prevent the unauthorised disclosure of individual information in published statistics.

6. Information provided under the Act is privileged. Except for a prosecution under the Act, no information that is provided under the Act can be disclosed or used in any proceedings. Furthermore no person who has completed a statutory declaration of secrecy under section 21 can be compelled in any proceedings to give oral testimony regarding individual

information or produce a document with respect to any information obtained in the course of administering the Act, except as provided for in the Act.

Census data

The Population Census is the most important stocktake of the population that is carried out. The statistics that are produced provide a regular picture of society. Results are used widely in making decisions affecting every neighbourhood. They are used in planning essential local services, and they also help to monitor social programmes ranging from housing to health.

Traditionally census data is published by Statistics New Zealand in aggregated tables and graphs for use throughout schools, business and homes. Recently Statistics New Zealand has sought to increase the benefits that can obtained from its data by providing access to approved researchers to carry out research projects. Microdata access is provided, at the discretion of the Government Statistician, to allow authoritative statistical research of benefit to the public of New Zealand.

This project used anonymous census data and mortality data which were integrated using a probabilistic linking methodology to create a single dataset that allows the researchers to undertake a statistical study of the association of mortality and socio-economic factors. The project has been closely monitored to ensure it complies with Statistics New Zealand's strict confidentiality requirements.

Further information

For further information about confidentiality matters in regard to this study please contact either:

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Project Manager, Data Laboratory

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Glossary

Area unit (AU)	An administrative unit referring to a geographically defined population group of around 2,000 individuals. Area units are used by Statistics New Zealand, particularly in relation to census data (thus the term Census Area Unit or CAU).
Array	Where more than one value is presented for the same variable (e.g. some mortality records contain two different dates of birth for the same individual – one from the NHI database and the other from the NMDS database).
AutoMatch®	The original version of the software package for carrying out probabilistic record linkage. The latest version is called QualityStage™
Bias analysis	Estimating any systematic differences between linked and unlinked mortality records (i.e. analysis of linkage bias).
Blocking variable	A variable used to break down large files into smaller subsets, to limit the number of possible comparison pairs. Comparison pairs are only formed when the blocking variable agrees exactly.
Blocks	The subsets resulting from blocking of larger files.
Clerical review	Investigator review of the records in a comparison pair, in order to decide whether or not these records are likely to apply to the same person. Clerical review usually occurs only for comparison pairs with a total weight within the cut-off range for the relevant linkage pass.
Cohort analysis	Epidemiological analysis of linked census-mortality cohort datasets to determine differences in mortality rates by social factors. (This is the primary aim of the New Zealand Census-Mortality Study.)
Comparison pair	Any possible comparison of a record from one file with a record from another file. In the NZCMS, comparison pairs consist of one census and one mortality record.

Cut-off weight	The total weight used as a threshold to decide which comparison pairs to accept as links, and which to reject. This weight is usually expressed as a discrete value, but may also be expressed as a range (where upper value = *acceptance weight*, lower value = *rejection weight*); in this case, all comparison pairs falling within the cut-off range are subjected to clerical review.
DA record	'Extra' census record from a duplicate pair – i.e., QualityStage™ has found two census (A) records that match the same mortality (B) record with total weight above the cut-off. One of these census records will be listed as part of a matching pair (MP), and the other as a duplicate match (DA). (The pair with the highest total weight will be listed as MP.)
DB record	'Extra' mortality record from a duplicate pair – i.e., QualityStage™ has found two mortality (B) records that match the same census (A) record. One of these mortality records will be listed as part of a matching pair (MP), and the other as a duplicate match (DB).
Dataset or Database	A large collection of information files, often stored in electronic form.
Decedent	Deceased person.
Disagreement weight	See **Weight**
Domicile Code	A classification system used by NZHIS to describe geographically based administrative units. Each domicile code refers to an area containing a median population of about 2,000. The NZHIS domicile codes have a one-to-one concordance with SNZ census area units, but (unfortunately) use a different coding system (due to historical limitations in the NZHIS database).
Duplicate pair	Two records from one file which can both form a comparison pair with a single record from the other file, and each comparison pair has a total weight above the cut-off (i.e. both are potential links).

False negative link	A comparison pair that is not accepted as a link, but is in fact a match.
False positive link	A comparison pair that is accepted as a link, but in fact is not a match.
Frequency ratio	The ratio of the probability of variable agreement in a matching pair to the probability of variable disagreement in a non-matching pair – i.e. *m* / *u*. The frequency ratio gives a measure of the relative significance of agreement on a particular variable. It is converted to a logarithmic scale for ease of comparison (see **Weight**).
Field	The information for each variable as presented in a file. For example, the 'income' field in the census file contains the information for the variable 'income' for each record (or person). In a computerised file, fields are often represented by columns.
File	A collection of multiple records. In the NZCMS, File A refers to census records, while File B refers to mortality records.
Geocode	A code referring to a geographically based unit of administration, forming part of a classification system. Geocodes referred to in this study include area units, domicile codes and meshblocks.
Linkage bias	Systematic differences by socio-demographic factors (e.g. age, deprivation) between linked and unlinked mortality records.
Links	1. A comparison pair that is accepted as being highly likely to apply to the same individual. In the NZCMS > 95% of links are probably matches. 2. A golf course (i.e. open ***field***), where ***matches*** are often played with little ***agreement*** between ***pairs*** (>95% of score cards are estimated to be correct, the remaining probably systematically biased)
MP pair	A linked (probably matching) pair of records, consisting of one census record (A) and one mortality record (B). The total weight for the pair is above the specified cut-off for the given QualityStage™ pass.
***m*-probability**	See **Probability**

Match	A pair of records that applies to the same individual (i.e. true links).
Match run	The sequence of passes used to link two files of records.
Matching variables	Variables common to two sets of records, for which we determine agreement or disagreement when comparing records.
Meshblock	The smallest geographic area used for coding purposes by Statistics New Zealand, with a median population size of 90-100.
National Health Index (NHI)	An NZHIS dataset, containing data for nearly every individual in New Zealand. This data is collected and updated every time a person uses public health services (e.g. outpatient visits, diagnostic investigations). The NHI dataset can be linked to NMDS events for the same individual by means of a unique identifier (the NHI number).
National Minimum Data Set (NMDS)	A dataset administered by NZHIS. Contains data for most individuals in New Zealand on both hospitalisation events and (where deceased) death events. Unlike the NHI dataset, which is updated for each new event, the NMDS contains a separate record for each hospitalisation event and thus provides several separate records for the same individual.
New Zealand Census-Mortality Study (NZCMS)	The New Zealand Census-Mortality Study (NZCMS) now consists of five cohorts of anonymously, probabilitically linked Census and Mortality records. See this and related documents for further information or look at http://www.wnmeds.ac.nz/nzcms-info.html
Non-links	A comparison pair that is *not* accepted as being highly likely to apply to the same individual.
Non-matches	Pairs of records that do not apply to the same individual (i.e. true non-links)

Partial agreement weight	The process of assigning an intermediate weight to variables that 'almost' agree (e.g. where 'year of birth' differs by only one year). This intermediate weight is less than the agreement weight but greater than the disagreement weight (thus the term 'partial agreement weight').
Pass	The process of linking two files for a given specification of blocking variable, matching variables, *m* and *u* probabilities, and cut-off weight. A series of passes carried out on the same two files is called a match run.
Positive predictive value (PPV)	The percentage of linked records that are matches (or 'true links').
Probabilistic record linkage	Record linkage of two (or more) files using the probabilities of agreement and disagreement between a range of matching variables. (This is distinct from deterministic record linkage, which links files on the basis of exact agreement between matching variables.)
Probability	
• ***m*-probability**	The probability that a matching variable agrees, given that the comparison pair in question is a match. This probability generally reflects the accuracy of the recorded data (e.g. if this is 100% accurate for both types of records, the *m*-probability will always be 1.0).
• ***u*-probability**	The probability that a matching variable agrees, given that the comparison pair in question is a non-match. This probability is generally determined by the likelihood of both records having the same value due to chance.
Random Rounded (RR)	Rounding of numerical values to the nearest multiple of three. Wherever this report refers to a particular group of census records, the total number of records will be random rounded in order to protect confidentiality.
Record	A set of variables applying to a single individual, observation or unit. In a computerised file, records are often represented by rows.

Record Linkage	The process of linking two or more files by looking for agreement or disagreement between matching variables within individual records.
Rejection weight	The total weight set as a threshold for determining which comparison pairs are *not* accepted as links (i.e. the records are deemed to apply to two different individuals).
QualityStage™	Latest version of the software package for carrying our probabilistic record linkage. The original version used was AutoMatch®.
Sensitivity	The proportion of matches detected as links, i.e. [true links] / [matches].
Skipping	Where two matching records fail to be linked because one of the records has been assigned to the incorrect block (on the basis of an erroneous blocking variable).
Specificity	Using either file in the record linkage process, the proportion of non-matching records detected as non-links, i.e. [true non-links] / [non-matches]. Note: a) the specificity varies depending upon which files it is calculated; b) the specificity can also be calculated from the perspective of comparison pairs (as opposed to records).
Total weight	The sum of the agreement / disagreement weights for each matching variable in a comparison pair of records.
True negative link	A comparison pair that is not accepted as a link, and is in fact a non-match.
True positive link	A comparison pair that is accepted as a link, and is in fact a match.
***u*-probability**	See **Probability**

Value-specific weightings	Agreement and disagreement weights that are specific to the actual value of a given variable. Value-specific weightings are used where some values are far less common than others, so the relative significance of an agreement for that value is much greater. For example, the agreement on New Zealand as country of birth adds much less weight than an agreement on Africa.
Weighting	The process of assigning a value to all possible comparisons of matching variables.
Weight	
•**Agreement weight**	The value assigned for agreement on a given matching variable. This value is a positive number, calculated from the *m* and *u* probabilities for that variable according to the following formula: [ln (*m* / *u*) / ln(2)].
•**Disagreement weight**	The value assigned for disagreement on a given matching variable. This value is a negative number, calculated according to the following formula: [ln ((1-*m*) / (1-*u*)) / ln(2)].

Abbreviations

AU	area unit (median population about 2,000)
CAU	census area unit - i.e. an area unit derived from census data (use area unit as the preferred name)
dd	day of birth
E[FP]	Expected number of false positive links
mm	month of birth
nonMPA	Non-Maori non-Pacific and non-Asian
NHI	National Health Index
NMDS	National Minimum Data Set
NZCMS	New Zealand Census-Mortality Study
NZHIS	New Zealand Health Information Services
NZSCO-68	New Zealand Standard Classification of Occupations, 1968
NZSCO-90	New Zealand Standard Classification of Occupations, 1990
NZSCO-99	New Zealand Standard Classification of Occupations, 1999
NZSEI	New Zealand Socio-Economic Index (an occupational class index)
PPV	Positive predictive value
RHA	Regional Health Authority
SNZ	Statistics New Zealand
yyyy	year of birth

Introduction

The primary aim of the New Zealand Census-Mortality Study is to determine mortality rates within different ethnic groups and socio-economic strata of the New Zealand population, and so estimate the association between socio-economic factors and mortality.

This is being undertaken through a series of cohort studies, where the cohort consists of the entire New Zealand population and the follow-up period is the three years following each census. The exposures of interest are ethnicity and socio-economic factors, and the outcome of interest is death in the three years following census night. Thus, in calculating mortality rates, the numerator (number of deaths) is derived from mortality data linked to census data, while the denominator (population number) is derived from census data.

If socio-economic factors were included on mortality records, it would be possible to calculate stratified mortality rates using unlinked census and mortality data. Unfortunately this is not the case: detailed socio-economic data (including education, labour force status, car access, housing tenure and household income) is included in census records, but not in mortality records. Therefore, the only way to calculate stratum-specific mortality rates is to link each mortality record back to its corresponding census record. This allows us to unite each decedent's mortality record with the socio-economic data recorded on the corresponding census form, and so assign each death event to the appropriate socio-economic stratum.

Further, the NZCMS allows us to check (and correct if necessary) any differences in the recording of ethnicity between census and mortality data, therefore ensuring accurate mortality rate calculations by ethnic group.

This report focuses on linking mortality records to the 2001 census data, and draws on the knowledge already gained by the team in linking four previous census cohorts to mortality data (Hill et al, 2002). Mortality data has previously been linked to 1981, 1986, 1991, and 1996 census data. Details of these earlier linkage processes can be found in reports on the Wellington School of Medicine and Health Science web site.

The objectives of this report are:

1. To describe the linkage methods, data requirements, linkage process, linkage outputs, and main analytical files for the 2001-04 cohort in the New Zealand Census-Mortality Study (NZCMS)
2. To describe the calculation of weighting factors to adjust for *linkage bias* in the 2001-04 Cohort in the NZCMS.
3. To describe the calculation of '*unlock ratios'* to adjust for any undercounting of Māori and Pacific deaths in the New Zealand mortality records, for the period 2001-04.

The report is organised in three parts, each addressing one of the above objectives.

By linkage *methods* we mean the anonymous and probabilistic record linkage methodology; and the methods developed in the NZCMS to determine the accuracy of the linkage.By *data requirements* we mean the preparation of mortality and census files for linkage, including descriptions of the necessary variables and geocodes.

By linkage *process* we mean the steps we undertook to link the 2001 census to mortality data, including the estimates of linkage accuracy.

By linkage *outputs* we mean the three files directly arising from the record linkage (linked census-mortality records, residual mortality file and residual census files), including the numbers of records in each file.

By *main analytical files* we mean the bias, unlock, and cohort files for the 2001 cohort.

- The bias file for the 2001 cohort consisted of all eligible mortality records, with an indicator variable for whether the mortality record was linked to a census record. This bias file allowed us to determine the differences in demographic and other characteristics between those mortality records linked and unlinked (i.e. *linkage bias*).
- The unlock file consisted of the subset of highly probable linked census-mortality records. We have used this file to determine the discrepancy between ethnicity recorded on census versus mortality data (i.e. unlocking the so-called numerator-denominator bias that has affected all routine calculations of mortality rates by ethnicity in New Zealand).
- The cohort file consisted of the full census file with information on mortality for those census records linked to a mortality record. (The cohort file has been weighted to adjust for linkage bias.) The cohort file is the major analytical file in the NZCMS that is and has been used for the majority of research outputs.

By *linkage bias* we mean that as the success of the linkage varies by socio-demographic strata, a consequence is that the association between socio-demographic measures and mortality outcome may be biased. Inverse probability weights are used to adjust for linkage bias.

By *unlock ratios* we mean the adjustment ratios used to adjust for numerator denominator bias in the calculation of un-linked ethnic specific mortality rates. This bias arises because the method of collecting and recording ethnicity data on the census and mortality records is different. Thus when mortality rates are calculated by dividing strata specific mortality counts by population counts for the same strata the results may be biased, because individuals are counted in different strata on the numerator and denominator. Changes made, in September to December 1995, to the way that ethnicity is recorded on the death registration form considerably reduced this bias. Nevertheless the unlock ratios were calculated to monitor the effectiveness of these changes.(Ajwani et al. 2002; Ajwani et al. 2004; Ajwani et al. 2003)

A significant difference between the 2001 cohort and the previous four cohorts is the age group used. The 2001 cohort includes all ages instead of just 1-74 years as used in the previous four cohorts. Previously, those older than 74 years on census night were excluded for two reasons; a concern that mobility into residential care would adversely affect the linkage; and a presumption that social group differences in mortality were not 'large' among the elderly. Recent research, combined with an aging population, means that we now include these older people in the 2001-04 linkage.

This report continues the series of technical reports describing the establishment of the first four cohorts of the NZCMS. This report combines for the 2001-04 cohort the elements that were reported in three separate reports for the earlier cohorts.(Ajwani et al. 2002) (Fawcett et al. 2002; Hill et al. 2002)

Part I Record Linkage for 2001-04 Cohort

I.1. Methods

A brief summary of the method for the anonymous linkage of census and mortality files is provided below., Readers interested in a more detailed description of the method should refer to previously published Technical Reports (Ajwani et al. 2002; Blakely 2001; Blakely et al. 1999) (Fawcett et al. 2002; Hill et al. 2002). These reports are available on the NZCMS website (http://www.wnmeds.ac.nz/nzcms-info.html or full path of http://www.wnmeds.ac.nz/academic/dph/research/HIRP/nzcms/index.html).

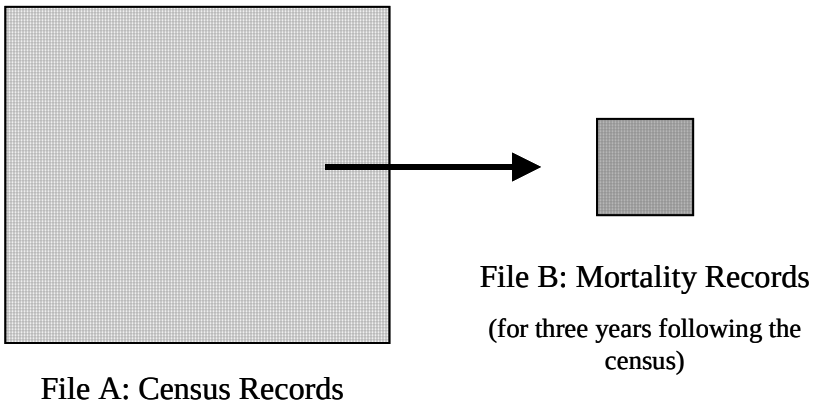
I.1.1 Summary of Methods for the Anonymous Linkage

The goal of the anonymous and probabilistic linkage process is to link two files containing records for the same population, but without the benefit of unique identifying variables to aid the linkage.

Hence we started with two sets of records: File A and File B. Each file contained records relating to the same population. File B consisted of mortality records from a three year period, and File A consisted of records from the census immediately preceding that period. Thus (in theory) each record in File B had a corresponding record (belonging to the same person) in File A.

Therefore, the purpose of probabilistic linkage was to match the records in File A to the most likely matching record in File B.

Figure 1: File A (census records) and File B (mortality records)



Probabilistic linkage applies a formalised system to the intuitive process of looking for agreement and disagreement between two individual records, and weighting the value of those agreements and disagreements to choose the most likely match.

Probabilistic record linkage combines two processes:

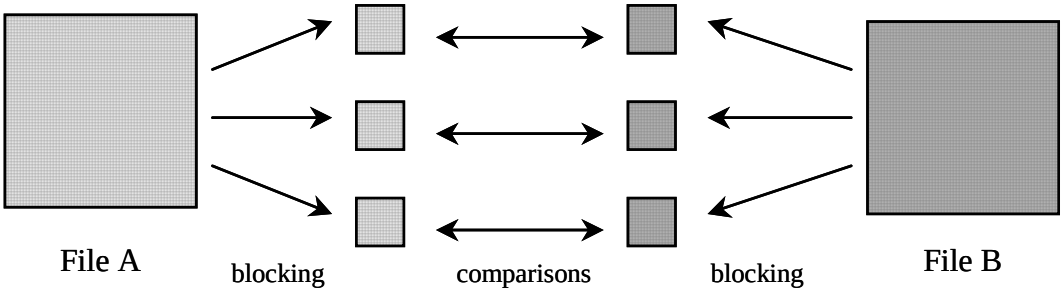
- It looks for agreement or disagreement between the corresponding (matching) variables contained in two records *(**record linkage** or **matching**)*.
- It assigns relative significance to each agreement/disagreement on the basis of probabilities *(**weighting**)*.

The NZCMS is based on probabilistic record linkage using **QualityStage™** software. This has superceded Automatch®, the software package used for the linkage of the earlier cohorts.

I.1.2 Blocking

To increase the computational efficiency of the record linkage, files were compared within ***blocks.*** A block is a subset of data within which the value of the ***blocking variable*** is the exactly the same on both files.

Figure 2: Blocking



For matches to be found, the blocking variable must be correct as comparisons between Files A and B only occur within the blocks. If this is not the case then the record cannot be linked. This problem is known as ***skipping***. To avoid skipping, records not matched within the first block comparison were pooled together, and submitted for matching with a second blocking variable. This process was repeated several times, using a different blocking variable for each matching process. Each time the number of unmatched records remaining became smaller, until eventually the marginal return was negligible. A single matching process (using one blocking variable) is called a ***pass.*** The sequence of passes used to match two sets of records is known as a ***match run*****.**

I.1.3 Weights

Matching has greater significance for some variables than for others. For example, agreement on sex has relatively little significance, whereas agreement on date of birth has more significance. In probabilistic linkage, difference in the significance of matching by different variables is accounted for by assigning weights to the different variables being matched.

The ***m probability*** is the probability of agreement for a given variable between two records for the same individual (i.e. a matching pair). The ***u probability*** is the probability of agreement between records for two different individuals (i.e. a non-matching pair).

The ***m probability*** depends upon the accuracy of the recorded data. For example, if day of birth is incorrectly recorded in 5% of records, the m probability for day of birth will be 0.95.

The *u* probability depends mainly on the likelihood of a variable matching due to chance. For example, a person's day of birth will be one of 31 possibilities. Thus the likelihood of a match for day of birth between two different individuals is 1/31 or 0.032.

The ***agreement frequency ratio*** is the ratio of the m and u probabilities. The frequency ratio provides a measure of the relative significance of agreement between variables for a particular variable. Agreement frequency ratios range from 1 to + ∞.

Disagreement frequency ratios can also be calculated for *disagreement* between two variables (i.e. [1-m]/[1-u]). This gives a measure of the relative significance of a non-match for this variable. Disagreement frequency ratios range from 0 to 1.

For ease of use it is conventional to convert these ratios to a linear scale using the natural logarithm to base two. The use of base two logarithms means that agreement ratios are expressed as positive numbers, while disagreement ratios are expressed as negative numbers. The base two log is the *relative probability of a true match*, where positive numbers represent increasing probability and negative numbers represent decreasing probability. The *relative probability of a true match* is called the *weight.*

Table 1: Example of agreement and disagreement frequency ratios and weights for comparison by matching variable 'day of birth'

Comparison Outcome	Proportion Links	Non-links	Frequency ratio	Weight
Agreement	0.95 (m)	0.03 (u)	32/1 (m / u)	4.98 [ln(m / u) / ln(2)] †
Disagreement	0.05 (1-m)	0.97 (1-u)	1/19 (1-m) / (1-u)	-4.28 [ln ((1-m)/(1-u)) / ln(2)] †

† The divisor, ln(2), transforms the natural logarithm to a base 2 logarithm.

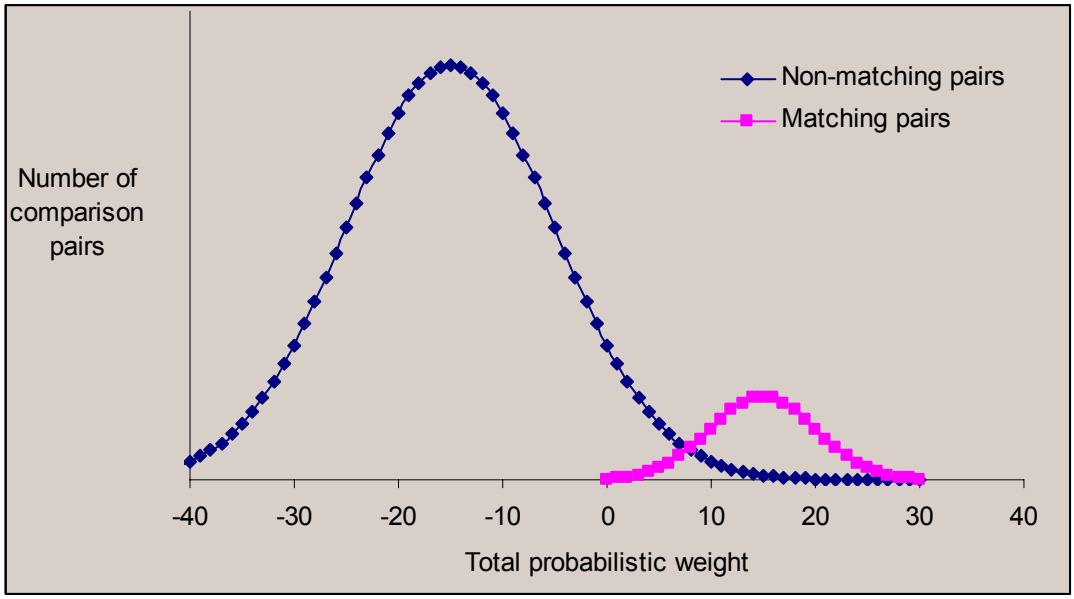
For each comparison pair, weights were calculated for each variable by the above process. The weights for each variable were added together to give a *total weight* for this comparison pair. This total weight indicates the relative probability that the two records belong to the same individual.

QualityStage™ undertook the mechanical aspects of the weighting and linkage processes described above. However, we first had to specify the *m* probability and other particulars of the matching process to be used for each variable. Details of these specifications are in the Technical Report for the 1991 Census Cohort.(Blakely et al. 1999)

I.1.4 Determining Cut-Off Weights

Weights were calculated for all possible pairs in a block. Where the variables matched for all variables, the matching pair had a highly positive weight. Conversely, where there was no agreement for any of variables (non-matching pair) the pair was assigned a highly negative weight. There were many more non-matching pairs than matching pairs and so the distribution of the total weights for two sets of records was generally bimodal (see Figure 3). Some pairs had a total weight in the intermediate range indicating a match for some variables, but not for others. A number of these pairs represented true links, while others represented false links.

Figure 3: Distribution of matching and non-matching pairs by total probabilistic weight



The *total weight* was used as the basis of the decision to accept or reject pairs as links. The cut-off threshold is a trade-off between the *number* and the *accuracy* of the links obtained. A higher threshold means that pairs are accepted only if they are highly likely to be true links. This approach gives a smaller number of links. Adopting a lower threshold means that many more pairs are accepted as links, but a number of these are likely to be false links (see Section I.2 below).

Clerical review may be used to improve both the accuracy and the yield of our linkage where pairs with intermediate weights are reviewed manually. However, for 2001-04 we used various decision rules conducted in SAS, rather then clerical review per se.

I.1.1 Improving Discriminatory Power

With QualityStage™ a number of techniques can be used to improve the discriminatory power of the linkage: In particular the use of value-specific weightings, partial agreement weights and arrays.

Value-Specific Weightings assign different weightings to specific *values* for the same variable. For example, a birthplace of 'Australia' is relatively common amongst New Zealand residents; thus a match for this variable (due to chance) is far more likely than for the birthplace grouping 'Africa'. A match on country of birth for the grouping 'Africa' has more weight than a match for the value 'Australia'. In the NZCMS, specific *m* and *u* probabilities were particularly relevant for the variables of ethnicity and country of birth.

Partial Agreement weights: Sometimes numerical variables are very close to agreeing, and differ by only a single digit. For example, it is common for the year of birth to be reported and entered incorrectly by only one or two years. Hence a small disagreement in year of birth is less significant than a large disagreement. Partial agreement weights allow a matching with specified degree of variation (or tolerance) in the numerical values on the two files. In these cases the weight applied for that variable is the partial agreement weight, which is a proportion of the full agreement weight. For example, in this study, a mismatch by one year, on the year of birth variable, was assigned a weight nearer to the agreement weight than a mismatch of two years. For the 2001-04 linkages 'tolerances' of plus or minus one were applied for day of birth and year of birth, for some later passes only.

Arrays: QualityStage™ allows variables to be specified as arrays. An array is a set of alternative values for the same variable. For example, the mortality data includes dates of birth from more than one source, and occasionally these sources differed. At least one of these values should have been incorrect, but we had no way of determining which was the true date of birth for that person. By specifying each of day, month and year of birth as three arrays, the alternative values were utilised to improve the probability of linkage.

I.1.5 Quality Shage™ Terminology

The NZCMS used two files for each census cohort. File A consisted of all census records. File B contained of mortality records for all people for the three years following the census. Theoretically, every record in File B should

have had a corresponding record in File A. However, in practice there are some mortality records for which there is no corresponding census record. For example where the decedent was not in New Zealand on census night or did not fill out a census form.

All comparison pairs were assigned to one of three categories

- Where the total weight was above the chosen threshold for a true link the pair was designated a matched pair (MP)
- If two census records matched to a single a single mortality record, both with probability weights over the threshold, the pair with the highest weight was designated 'MP', and the remaining census record was designated 'DA' (duplicate A). If both pairs had the same weight one was arbitrarily assigned as 'MP' and the other as 'DA'.
- Less commonly, two mortality records could have been matched with the same census record. Again, the pair with the highest weight was designated 'MP', and the remaining mortality record categorised 'DB' (duplicate B).

In practice, around three-quarters of all mortality records were successfully matched with a census record and accepted as links in the 1980's and 1990's. In contrast, only a very small proportion of individuals who completed census forms were be expected to die in the following three years. Thus the vast majority (~99%) of census records remained unlinked at the end of the linkage process.

I.2. Determining the Accuracy of the Record Linkage

The nature of anonymous and probabilistic linkage means that we cannot be entirely certain that a linked pair of records do actually belong to the same person. Mortality records can be distributed according to link/non-link status by match/non-match status is as illustrated in the two-by two table below. If the outcome was death, then matches would be those who died during follow-up and non-matches would be those alive at the end of follow-up.

	Matches	Non-matches
Linked	**a** (true positives)	**b** (false positives)
Unlinked	**c** (false negatives)	**d** (true negatives)

In probabilistic record linkage this categorisation is achieved by setting a cut-off score above which comparison pairs are considered linked, and below which they are considered unlinked. The higher the cut-off, the more probable the link is to be a match. Accordingly, we can quantify the performance of the record linkage in *classifying the outcome* in the following way:

Sensitivity	= a / (a+c)
Specificity	= d / (b+d)
Positive predictive value	= a / (a+b)
Negative predictive value	= d / (c+d)

These parameters will vary depending on the cut-off: Decreasing the cut-off will increase the sensitivity, but also increase the number of false positives; Increasing the cut-off will decrease the sensitivity, but also decrease the number of false positives.

Since we have no ‘gold standard’ for establishing which matches are true links, we used indirect measures to estimate the sensitivity and specificity of our linkage process.

The *sensitivity* of our record linkage was estimated from the proportion of mortality records that were successfully linked in the final match run – i.e.:

$$\text{Sensitivity} = \frac{\text{Number of mortality records that were successfully linked } \mathbf{(a)}}{\text{Number of mortality records for which a link is possible } \mathbf{(a + c)}} \approx \frac{\text{Accepted links}}{\text{All true links}}$$

This estimation is based on two assumptions:

1. The number of false positive links is negligible compared with the total number of accepted links .
2. The number of mortality records for which there are no corresponding census records is negligible .

There is no corresponding simple approximation for estimating the *specificity* of record linkage. The specificity varies depending on whether it is calculated from the perspective of the mortality or census records. Unlike the sensitivity, the specificity cannot be directly estimated from the numbers of records linked.

Two methods ('chance method' and 'duplicate method') for estimating the PPV were developed specifically for the NZCMS. Details of these can be found in the first Technical Report (pages 43-61) and elsewhere.(Blakely 2002; Blakely and Salmond 2002; Blakely et al. 1999) Both methods are applicable only to record linkage projects where there is only one true link for each record (so-called 'best linkage').

The chance method estimates the number of false positive links among exactly matching pairs. For example, on average there are about ([sex (2)] × [dd (30)] × [mm (12)] × [yyyy (60] × [ethnicity (1.2)] × [country of birth (1.2)] = 10,368) 10,000 possible combinations of exact agreements.[1] Thus, each mortality record has an approximately 0.00001 probability of agreeing exactly with any *one given* census record. For a meshblock pass where each mortality record is compared to 100 census records, each mortality record has a 0.001 or 0.1% chance of forming a false positive link.

The duplicate method utilises the varying probability of a false positive link by total weight score in the record linkage and the occurrence of duplicate links. Its main advantage over the chance method is its applicability to non-exact agreements. Using the probabilities of a single mortality record being matched

[1] Where 60 for year of birth and 1.2 for ethnicity and country of birth are 'weighted' numbers given the uneven distribution by values for these variables.

with zero, one, or two census records, it estimates the number of false positive links using binomial combinatorial probabilities. This method is described in detail elsewhere.(Blakely and Salmond 2002)

Each of the above methods has advantages and limitations. In practice, both were used and produced similar results in earlier cohorts and indicated an overall PPV of around 97.5 – 98% for all record linkage.

I.3. Data used in the record linkage

This section focuses on the creation of census and mortality data files with variables that were suitable for the linkage. A detailed description of all the variables that were available on the three NZCMS 2001-04 datasets is provided later (Section I.5).

I.3.1 Census Data

All census data is stored by Statistics New Zealand, and is kept under conditions of strict privacy. Since the data was not permitted to leave SNZ, SNZ undertook both the preparation of the census files, and the actual record linkage. The census data required for the NZCMS 2001-04 cohort was extracted from the census master-file and made into a new file with the few variables that were needed for the linkage.

I.3.2 NZCMS Census Linkage File

Variables included in the census file were those that were to be used for integrating with mortality files (i.e. record linkage). The census variables that were used in the record linkage are presented in Table 2. (The full list of all census variables available for the cohort analyses is presented in Table 52, page 113). A more detailed description of the derivation of all variables used for the linkage is given in section I.5 (page 47).

Table 2: Census variables included for use in record linkage

Group	Variable Names	Format.	Notes
Unique Identifier	ID	$8	Unique Identifier on Census
Geocoded variables	AU	$6	Area Unit (Usual Residence base 2001)
	MB	$7	Meshblock (Usual Residence base 2001)
Country of birth	COB	F9bthgp.: 1=NZ, 2=Australia, 3=British Isles, 4=Europe, 5=Pacific Is, 6=Africa, 7=Americas, 8=Asia, 9=Elsewhere, 0=Missing	Country of Birth Group
Date of Birth	DAYA	1 to 31 or 99 for missing	Day of birth
	MONTHA	1 to 12 or 99 for missing	Month of birth
	YEARA	1900 to 2001 or 9999 for missing	Year of birth
Sex	SEX	1=Males, 2=Females	Sex
Ethnicity Variables	MAORI	1=NZ Maori, 0=not Maori, 9=missing	Maori : non-Maori total ethnicity
	PACIFIC	2=Pacific People, 0=not Pacific, 9=missing	Pacific : non-Pacific total ethnicity
	ASIAN	4=Asian, 0=not Asian, 9=missing	Asian : non-Asian total ethnicity
	NONMPA	5=nonM nonP nonA, 0=Maori or Pacific or Asian, 9=missing	non-Maori, non-Pacific, non-Asian ethnicity
Country of Birth and Ethnicity Interaction Variables	PACFIX	2=Born in Pacific and Pacific Ethnicity on Census, [5=Born in Pacific and Pacific Ethnicity on Mortality], 9=Not born in Pacific and/or not of Pacific Ethnicity	Pacific born and Pacific ethnicity

Group	Variable Names	Format.	Notes
	ASNFIX	4=Born in Asia and Asian Ethnicity on Census, [8=Born in Asia and Asian Ethnicity on Mortality], 9=Not born in Asia and/or not of Asian Ethnicity	Asian born and Asian ethnicity

NonMPA = non Maori, non Pacific, and non Asian.

The country of birth and ethnicity interaction variables denoted Pacific and Asian people born in the Pacific or Asia respectively and was necessary to prevent “double counting” for these people, leading to a too high agreement weight and some linkages that were not correct. (I.e. As both Pacific or Asian ethnicities are relatively uncommon in the data and Born in Pacific or Born in Asia are also relatively uncommon in the data, they both have high probability weights and if someone has both Pacific ethnicity and Born in the Pacific they will have both these weights added and this total weight needs to be reduced to make sure other variables used in the linkage also agree.)

I.4. Mortality Data

A file of records for decedents who died in the three years subsequent to the 2001 census was created from five data files provided by the New Zealand Health Information Service (NZHIS). These five files contained a subset of data from the Current National Hospital Index dataset (NHI), December 2001 Archive of the NHI dataset, the National Minimum Data Set (NMDS), Mortality Events file and the Mortality Diagnostics File.

In order to create a file suitable for linking with the census, it was necessary to create a Mortality Linkage File. This included variables from all five of the above data files.

The Mortality Linkage File was restricted to those who were alive on census night. Decedents whose domicile was coded as overseas were also excluded. Some further records were deemed ineligible if the decedent was unlikely to have been resident in New Zealand at the time of the census.

Ideally, we wished to exclude any New Zealand resident who died in New Zealand but had not been living in the country at the time of the 2001 census (since their mortality record would have no corresponding census record and thus could not be linked). The NMDS mortality database includes a ‘duration in New Zealand’ variable, recording how long each decedent has been living in New Zealand. Experience from the linkage of earlier NZCMS cohorts had shown that on the majority of mortality records the ‘duration in New Zealand’ variable was filled in with what seemed to be age at death.

Despite this, there were, three groups for whom linkage was very unlikely.

1. Children under (or exactly equal to) 3 years of age, whose duration value was less than their age. (186)
2. Decedents with a value of zero for their duration in New Zealand field. (101)
3. Decedents whose duration in New Zealand was less than the time between their death and census night, and the value is not blank or 99 or zero, nor is it equal to their age. The data suggested that the decedent did not live in New Zealand at the time of the 2001 census. (232)

I.4.1 NHI-Current File (82640 mortality records for the 2001-04 cohort)

The National Hospital Index (NHI) file holds demographic information for each person who comes in contact with the public hospital system. The data is updated each time an individual uses the public health system. Historical data is currently not retained.

Information contained in the NHI-Current file includes date of birth, date of death, ethnicity codes, a unique NZCMS ID number, domicile code (equivalent to census area unit), address flag and geocoded meshblock. The file includes one record per decedent.

I.4.2 NHI-Archive File (81958 records for the 2001-04 cohort)

The personal information on the NHI dataset is updated each time a person comes in contact with the hospital system; consequently the historical data is over-written. In anticipation of linking the 2001 census, an archive file of the NHI file was made by NZHIS in December 2001. The address information on this dataset is that held at the time the archive file was created. Where individuals changed address between December 2001 and their date of death, the geocoded address (meshblock) information was different than that stored on the current NHI dataset file.

The historical dataset thus provides alternative values for all variables on the NHI_current file. This was used for creating the Mortality Linkage File. However, because the file is only updated when a person has contact with the hospital system the archive file may not necessarily contain more up-to-date information than the mortality file. Fortunately the date of contact with the hospital system is recorded. In general the value of most variables used in the linkage process was the value recorded closest to the census date.

I.4.3 National Minimum Data Set (NMDS) Subset (502539 records)

The NMDS subset contains records for a number of health events (hospitalisation, cancer registrations etc…) relating to any one person who subsequently died. The dataset has one record per health event. The file for the NZCMS included sex, date of birth, date of death, dates of admission, dates of discharge, ethnicity codes, New Zealand resident status, country of birth, domicile codes, address flag and a unique NZCMS ID number.

The NZCMS ID numbers were created and used for linking the different mortality data sets. It is noted however, that individual NHI numbers were unknown to us, helping to ensure that confidentiality was maintained.

I.4.4 Mortality Event File (82640 records for the 2001-04 cohort)

The mortality file is derived from death certificates (form BDM50) and includes one record per decedent. The information includes date of birth, date of death, unique NZCMS ID number, ethnicity codes, country of birth, years in New Zealand, domicile codes, geocoded address (meshblock), Death type codes, clinical notes related to the death, and occupation codes.

Regarding the NMDS death event, it is important to note that the demographic details (date of birth, sex, ethnicity and country of birth) are usually entered independently of the NHI file. The information is elicited by an undertaker and entered on the death registration form (BDM28). The only situation in which NHI and NMDS data are derived from the same source is when a decedent has no previous hospitalisation event, in which case the NMDS demographic data is used to construct the NHI file.

I.4.5 Mortality Diagnostics file (121514 records- death events)

The mortality diagnostics file included cause of death information for both the underling and contributing causes of death. There was a separate record for each cause of death, so each decedent may have multiple records. The unique NZCMS ID number identifies decedents. Variables on the file include id, diagnostic type, clinical code and clinical coding version used.

I.4.6 Creation of the NZCMS 2001 Mortality Linkage File[2]

The NZCMS 2001 Mortality Linkage file was created by combining four files:

1. The NHI–current file
2. The NHI–archive file
3. The National Minimum Data Set subset
4. The Mortality Event File

Note that cause of death information was not included on the NZCMS Mortality Linkage file. Cause of death data was merged with the NZCMS 2001

[2] \2001_04\SASforLinkage\alldataforlinkage.sas7bdat

MASTERFILE after the linkage of census and mortality records was completed (see Figure 4).

The creation of the mortality linkage file from four files had several important implications:

Mortality records sometimes contained more than one value for certain variables (i.e. date of birth, sex, ethnic group). This occurred where variables were recorded independently on different files. For example, variables could differ between files for the same individual for changing self-defined ethnic group over time, or coding errors for date of birth.

A systematic approach was developed to create the variables that were used in the record linkage. The derivation of each variable from the multiple sources of information is described in the following sections.

Several sources of information for the geocoded address fields were included in each mortality record.

Two types of geocoded data were used to create blocking variables for the data linkage – Meshblocks and Area Units.

The smallest administrative unit used by SNZ is the 'meshblock', which have a median population of about 100 people. Meshblocks are nested within 'area units' (AU), which have a median population of about 2,000. On the census file, each person is coded as residing in a particular meshblock. To assign a meshblock requires detailed information about residential address. The NHI-current file, NHI-archive file and the Mortality event file contained meshblock codes created by NZHIS from detailed address information.
Domicile codes are the NZHIS equivalent of SNZ Area Units (AU). Several domicile codes (or area units) are available for any one individual: two from their current and archived NHI record, and one from *each* of their NMDS health event records. The NHI domicile code is that entered directly by a hospital at a person's last health event. NMDS domicile codes correspond to a person's address at the time of various health events.

Figure 4 gives a diagrammatic representation of the creation of the various datasets. The variables included on the NZCMS Mortality Linkage file are given in Table 3.

Figure 4: Sources of Data for the NZCMS Master File (2001-04)

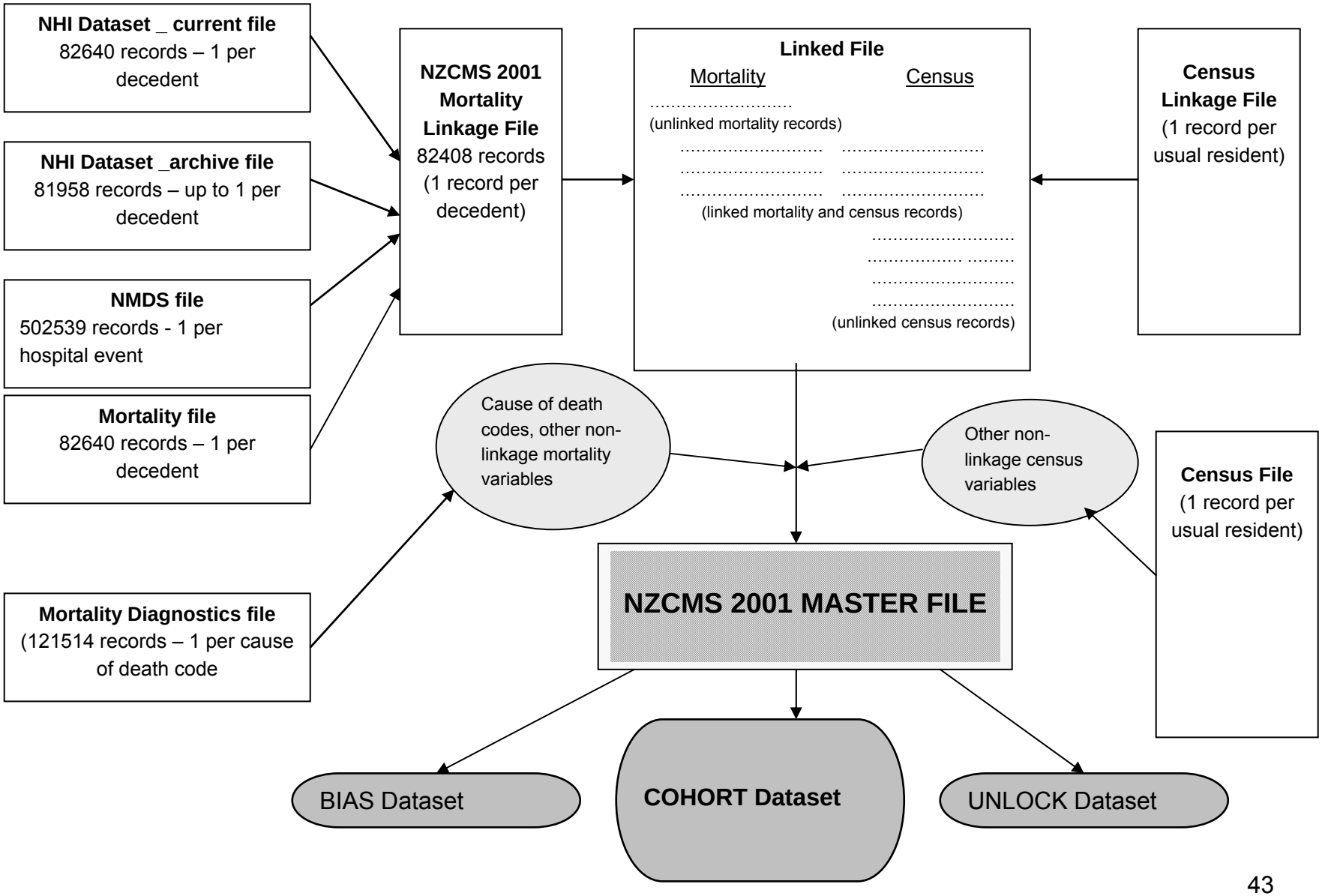


Table 3: Variables on the NZCMS 2001 Mortality Linkage File[†]

Group	Variable Names	Format.	Notes*
Unique Identifier	ID_Mort	$8.	Unique Identifier
Geocoded variables	*AU1--AU18	$6.	Area Unit. Up to 18 options in descending order of time near census data, or descending likelihood
	NumAUs	1 to 18	Number of Area Unit Values
	MB01_1 -- MBO1_3	$7.	Meshblock for linkage, Options 1-3
	NumMB	0 to 3	Number of Meshblock Values
Country of birth	*Bcountry	F9birthgp. : 1=NZ, 2=Australia, 3=British Isles, 4=Europe, 5=Pacific Is, 6=Africa, 7=Americas, 8=Asia, 9=Elsewhere, 0=Missing	Country of Birth
	Bcountry1 - BCountry3	F9birthgp. (See above)	Alternative County of Birth Options 1 to 3
Date of Birth	dob_1 -- dob_5	Ddmmyy10.	Date of Birth options 1 to 5
	*dob_dd1 -- dob_dd5	1 to 31 or 99 for missing	Day of birth options 1 to 5
	*dob_mm1 – dob_mm5	1 to 12 or 99 for missing	Month of birth options 1 to 5
	*dob_yy1 – dob_yy5	1892 to 2001 or 9999 for missing	Year of birth options 1 to 5
Sex	SexFlag	fsexflg.: 1=All Same Sex, 2=Mainly one sex + "Other", 3=Mixture of Sexes. Over 67% Male, 4=Mixture of Sexes. Over 67% Female, 5=Unsure of correct sex code, 6=Unsure of Sex. Used Mortality.	Flag to identify records with non-consistent sex values
	*SexforMerge	fvsex.: 1=Males, 2=Females	Sex value for matching
Ethnicity Variables	Eth_A	0 to 46	Number of times identified as Asian
	Eth_A_CNHI	4=Asian, 0=not Asian, 9 (or .) for missing	Asian on NHI file

Group	Variable Names	Format.	Notes*
	Eth_A_Mort	4=Asian, 0=not Asian, 9 (or .) for missing	Asian on Mortality File
	Eth_M	0 to 947	Number of times identified as Maori
	Eth_M_CNHI	1=Maori, 0=not Maori, 9 (or .) for missing	Maori on NHI file
	Eth_M_Mort	1=Maori, 0=not Maori, 9 (or .) for missing	Maori on Mortality File
	Eth_O	0 to 707	Number of times identified as Other
	Eth_O_CNHI	5=nonM nonP nonA, 0=Maori or Pacific or Asian, 9 (or .) for missing	Other on NHI file i.e. nonMaori nonPacific nonAsian
	Eth_O_Mort	5=nonM nonP nonA, 0=Maori or Pacific or Asian, 9 (or .) for missing	Other on Mortality File
	Eth_P	0 to 695	Number of times identified as Pacific
	Eth_P_CNHI	2=Pacific, 0=not Pacific, 9 (or .) for missing	Pacific on NHI file
	Eth_P_Mort	2=Pacific, 0=not Pacific, 9 (or .) for missing	Pacific on Mortality File
	EthTotobs	0 to 947	Total number of ethnicity values
	MultEthCnt	0 to 3	Identifies with more than one ethnic group
Country of Birth * ethnicity Interaction Variables	EthAsianCNHIFix	8=Born in Asia and Asian Ethnicity on NHI, 9=Not born in Asia and/or not of Asian Ethnicity	
	EthAsianFix	[4=Born in Asia and Asian Ethnicity on Census,] 8=Born in Asia and Asian Ethnicity on Mortality or NHI, 9=Not born in Asia and/or not of Asian Ethnicity	
	EthAsianMortFix	8=Born in Asia and Asian Ethnicity on Mortality, 9=Not born in Asia and/or not of Asian Ethnicity	
	EthPacCNHIFix	5=Born in Pacific and Pacific Ethnicity on NHI, 9=Not born in Pacific	

Group	Variable Names	Format.	Notes*
		and/or not of Pacific Ethnicity	
	EthPacFix	[2=Born in Pacific and Pacific Ethnicity on Census,] 5=Born in Pacific and Pacific Ethnicity on Mortality or NHI, 9=Not born in Pacific and/or not of Pacific Ethnicity	
	EthPacMortF	5=Born in Pacific and Pacific Ethnicity on Mortality, 9=Not born in Pacific and/or not of Pacific Ethnicity	

*matching or blocking variables for the linkage process

†the file includes variables used for QualityStage™ Linkage and for clerical review.

I.5. Notes on Specific Variables

I.5.1 Sex Variables

One sex variable exists for each respondent on the census file. It is never missing as it always imputed by SNZ on the census master file, even if missing from the census form. A flag showing that sex was imputed was included. Imputation was done using information from other members of the household, where the nature of the relationship to the respondent was sufficient that the sex variable could be derived.

All the mortality files included a value for the sex variable. The value of the sex variable (Sexformerge) used for the linkage was derived from the most common value for the variable, or when unsure the value used was the value on the Mortality Events file. The sexformerge variable has no missing values.

An additional variable (SexFlag) was added to the mortality linkage file for use in clerical review. ‘Sexflag’ was assigned the values: 1=all one sex; 2 = mainly one sex + other; 3 = over 67% values = males; 4 = over 67% values = females; and 5 = unclear, used NMDS sex.

This SexFlag variable was used in clerical review. Sex_mort was added for the final datasets, this was the actual sex on the mortality file.

I.5.2 Date of Birth Variables

On the census file, data includes one date of birth field. For the linkage, day, month and year of birth were coded as separate variables.

On the mortality file there were up to five date of birth values split into separate variables of day, month, and year. In most cases the date of birth variable was identical on all files. Where values differed, the options were ordered according to how frequently they occurred (i.e. option 1= most frequent date of birth). For the linkage, the day, month and year of birth were coded as separate variables, each with up to five options.

Note that there were up to five different date of births (dd/mm/yyyy) and these were split into their separate variables day, month and year even if this meant they contained the same value. They were not reduced just to unique days, unique months or unique years.

I.5.3 Ethnicity Variables

The census allows individuals to identify with multiple ethnic groups, and since 1995 the death registration form has also allowed multiple ethnic groups to be identified.
For the purposes of linkage, ethnicity was categorised in the following way. Four categories of ethnicity were produced – Maori, Pacific, Asian and NonMPA (European/Other). A series of variables were then created with binary values. For each of the four ethnic groups a variable was used to describe whether the decedent was recorded as identifying with that ethnic group in the various data sources. Where respondents had elected multiple ethnic groups they were coded 1 for Maori, 2 for Pacific, 4 for Asian or 5 for nonMPA for each of the relevant variables corresponding to those options, otherwise they were coded 0, or 9 for missing.

For example.
On the census linkage file one variable (Eth_M_Cen) describes whether the respondent was recorded as Māori. Eth_M_Cen is coded as 1 if the respondent is recorded as Māori, and otherwise coded as 0 or (9 if missing). Similarly, the respondent is coded as 4 or 0 for Asian (Eth_A_Cen), as 2 or 0 for Pacific (Eth_P_Cen), and as 5 or 0 for other (Eth_O_Cen) ethnic groups. Ethnicity was missing for 3.8% of census records.

Corresponding variables were created on the mortality files. The mortality linkage file also included variables for ethnicity from the NHI files. For example, Eth_M_Mort was coded 1 if Māori on NMDS Mortality File, otherwise coded as 0. Eth_A_CNHI looked at the data on both the NHI Current file and the NHI Archive files and chose the value of the variable dated closest to the 2001 Census. It was then coded 1 if Māori, 0 if other, or (9 if missing).

The same process was used to create similar variables for the Asian (Eth_A_CNHI, Eth_A_Mort, Eth_A), Pacific (Eth_P_CNHI, Eth_P_Mort, Eth_P) and Other Groups (Eth_O_CNHI, Eth_O_Mort, Eth_O).

I.5.4 Meshblocks and Area Units

Meshblocks and Area Uunits have already been described on page 42. Meshblocks are preferred over Area Units as they provide more discrimination in terms of record linkage.

A meshblock of residence was recorded for all census records, but was sometimes unable to be assigned to mortality records. Mortality records do, however, include at least one domicile code which was used as a 'second choice' measurement of location when the meshblock was missing. In order to allow linkage to take place in the absence of meshblock codes (or if the meshblock code was incorrect), all census records were also assigned their usual residence Area Unit code.

Census meshblock and Area Unit codes tend to change over time as populations expand or diminish and area boundaries are changed accordingly. The 2001 census used 2001 meshblock codes. Forward coding was required to change some mortality data into 2001 meshblock codes.

Three sources of address information were available for the mortality records – the NHI current file, the NHI archive file, and the Mortality Event file. Up to three meshblocks could therefore be assigned, whereby the meshblock codes were ranked according to how close the date of the address recorded was to the census. The closest date was ranked highest. Three meshblock variables were produced for matching, MB01_1 -- MBO1_3.

The NMDS file included dates and domicile codes for each hospital admission on record. Consequently, it was possible to order admissions and their associated domicile codes according to closeness to the census. Eighteen Area Unit Variables (AU_1 to AU_18) were created, with those recorded closest to census night given highest priority. In practice however only the four highest priority AUs were used in the linkage.

I.5.5 Country of Birth Variables

Country of birth is recorded on both the mortality and NHI datasets. The mortality country of birth code was used for linkage (Bcountry). Where the country of birth was missing on the mortality events file, it was imputed from the most common value on the NHI files.

Country of birth information was grouped into the 9 categories: 1=Born NZ; 2=Born Australia; 3=Born British Isles; 4=Born Europe; 5=Born Pacific Islands; 6=Born Africa; 7=Born Americas; 8=Born Asia; 9=Born Elsewhere; 0=Missing.

Three other variables were also created that record other country of birth options from the NHI and mortality files (BthCountry1, BthCountry2, BthCountry3). These variables were used for clerical review. The variables were ordered according to the frequency of the value. For example, Bcountry1 = most common place of birth recorded, Bcountry2 = second most common place of birth recorded, and Bcountry3 = third most common place of birth recorded.

I.5.6 Interaction of country of birth and ethnicity variables

Ideally all variables used for linkage should be independent. However, experience from linkage of the earlier cohorts had shown that this was not the case for country of birth and ethnicity variables. (Hill et al. 2002) In particular the agreement weights were too high for links where there was either: agreement on ethnicity as Pacific and agreement on country of birth as Pacific; or agreement on ethnicity as Asian and agreement on country of birth as Asian. This occurred because decedents of Pacific or Asian ancestry were highly likely to have Pacific or Asian country of birth (respectively).

To get around this problem two additional variables were created whereby the census and mortality values were reassigned so that they did not agree. On the mortality file if someone was born in the Pacific and of Pacific ethnicity they were given a value of 5, otherwise they were given a value of 9 for missing. On the census file if someone was born in the Pacific and of Pacific ethnicity they were given a value of 2, otherwise they were given a value of 9 for missing. Similarly, mortality Asian born in Asian were given a value of 8, otherwise a value of 9 for missing, and on the census file, Asians born in Asian were given a value of 4, otherwise a value of 9 for missing.

Consequently, those links with complete agreement on ethnicity and country of birth when both variables were either Pacific or Asian actually registered a disagreement for these particular composite variables (EthPacFix and EthAsianFix) in QualityStage™ (All other comparisons would have a missing value on either the census or mortality file, thereby scoring no weight).

I.6. Record linkage process and outputs

This chapter presents the outcomes of the record linkage process under the following headings:

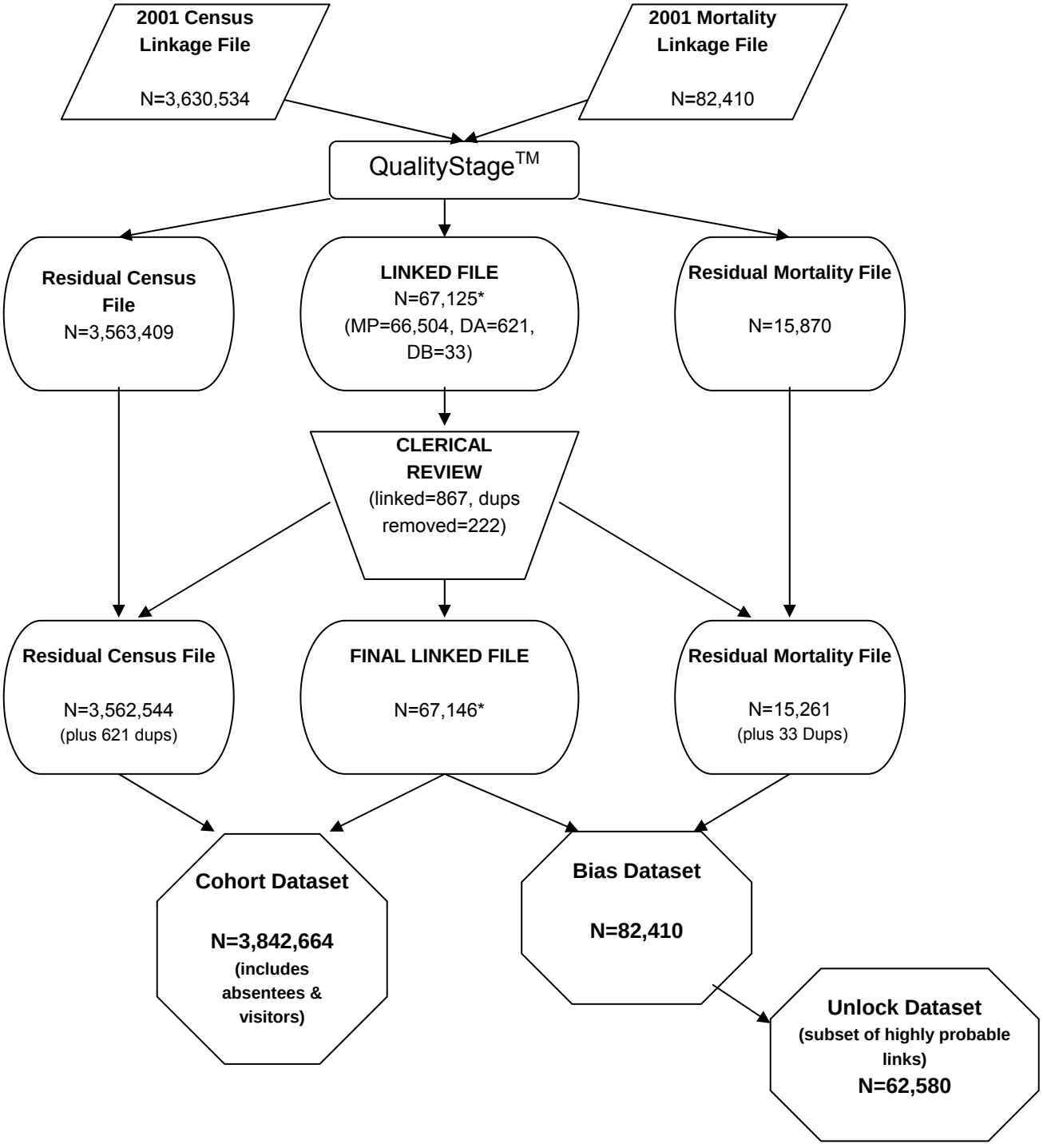
1) overview of the linkage process.
2) the final match-run strategy
3) the m and u probabilities and variable weightings from the first pass of the final match run
4) accuracy of the record linkage (false positives and positive predictive value)

This ordering is intended to provide a logical outline of the linkage process, rather than reflecting the exact chronological sequence of the work.

I.6.1 Overview of the linkage process

The 2001 census included records for a total of 3,630,534 (RR) New Zealand residents on the 6th March 2001 (File A). For the three years following the census night, NZHIS received 82,410 (RR) mortality records for persons who died during this period. The flow of census and mortality records through the linkage process is shown in Figure 5.

Figure 5: Flow diagram of census and mortality records for the 2001-04 cohort[3]



[3] All these numbers have been random rounded to multiples of three according to Statistics New Zealand protocols

* 67,146 (random rounded) arises from : [67,125 linked in passes] + [867 linked in clerical review] – [222 duplicates removed in clerical review] – [621DA pairs removed]

I.6.2 The final match run strategy

Various match-run iterations were trialled to determine the 'best' linkage strategy. The final match run strategy (including the percentage of links) is presented in Table 4. Overall, 81.5% of mortality records were linked to a census record, equating to 67,146 linked pairs.

Clerical review was undertaken by running a program in SAS (MBCRprog.sas) written after we first looked at what were and were not satisfactory selection criteria for a sample of the data. QualityStage™ passes 8, 9 and 10 were run using blocking variables Meshblock 1, 2 and 3, using the same specifications as for passes 1, 2 and 3, but with the addition of a +/-1 day and +/-1 year tolerance. These passes 8, 9, and 10 all used the residual files from pass 7 with zero cutoff, and the possible links from all three passes were pooled as it was highly unlikely that any record would be linked on more than one of these passes. The SAS program investigated the possible links and using the criteria rules we had determined earlier and making use of the extra mortality dataset variables, decided which links would be accepted.

Details of the Clerical Review SAS program comparisons in order looked at :

1. Accept if link weights greater than or equal to 14.6.
2. Reject those with weights less than 7.9.
3. Reject those with complete missing or incorrect ethnicity who do not have correct sex and day, month or year of birth (day or year but not both can have a +/- 1 tolerance).
4. If sex and year correct but day and month missing then reject.
5. If sex correct but either (no day, month or year information), or only day or month, or (day or year correct but month incorrect) then reject.
6. If sex, month, year, any of the three country of birth variables, ethnicity, ethnicity/country fix all correct (i.e. ignoring day of birth), then if (year of birth >= 1925 and weight > 8.5) or (year of birth < 1925 and weight >= 11) then accept, otherwise reject.
7. If sex, day, month, any country of birth, ethnicity all correct then if (weight >= 11) or (agreed that born in NZ and weight >= 8.5) then accept, otherwise reject.
8. If sex incorrect but day, month, year, country of birth, and all ethnicities are correct, then if weight >= 8.5 then accept, otherwise reject.
9. If sex incorrect then reject.
10. If month of birth incorrect but day, year, country of birth, Maori, Pacific and Asian ethnicities are all correct, and country of birth is not NZ, then accept. If country of birth is NZ then reject.

11. If sex, month, year and all ethnicities correct, then if (country of birth is NZ or missing) and ((year of birth >= 1925 and weight > 8.5) or (year of birth < 1925 and weight >= 11)) then accept, otherwise reject.
12. If sex, month, year, any country of birth, Maori, Pacific and Asian ethnicities all correct and country of birth is not missing or NZ then accept.
13. If sex, month, year (+/- 1), country of birth, Maori, Pacific, Asian all correct but nonMPA is incorrect, then if have Maori and/or Pacific and/or Asian ethnicities then accept, otherwise reject.
14. If sex, day, month, year (+/- 1), all ethnicities all correct then if country of birth missing or NZ and weight >= 11 then accept, otherwise reject.
15. If all ethnicities not correct then reject.
16. Remaining combinations all rejected.

At the end of the linkage process there were three final output files: a final linked file, a final residual census file and a final residual mortality file (see Figure 6).

Table 4: Final match-run strategy, 2001-04

Pass and blocking variable(s)	Main match specifications	Matching variables	Links from each pass (includes duplicates)	% total mortality records linked
1. Meshblock 1	Match cut-off weight = 11.90	Sex, day of birth (array), month of birth (array), year of birth (array), Maori, Pacific, Asian, Other, birth country, Asianfix, Pacificfix	46,798 links from 82,408 records [includes 240 exact DA, 20 exact DB pairs]	(56.79%)
2. Meshblock 2	Match cut-off weight = 11.90	As for pass one	3382 links from 35,590 records [23 DA and 2 DB pairs]	(4.10%)
3. Meshblock 3	Match cut-off weight = 11.90	As for pass one	118 links from 32,206 records [no DA or DB pairs]	(0.14%)
4. Area Unit_1 and Sex	Match cut-off weight = 14.40	day of birth (array), month of birth (array), year of birth (array), Maori, Pacific, Asian, Other, birth country, Asianfix, Pacificfix	7493 links from 32,088 records [includes 194 exact DA and 7 exact DB pairs]	(9.09%)
5. Area Unit_2 and Sex	Match cut-off weight = 14.40	As for pass 4	6277 links from 24,588 records [126 DA dups and 5 DB pairs]	(7.62%)
6. Area Unit_3 and Sex	Match cut-off weight = 14.40	As for pass 4	2004 links from 18,306 records [32 DA]	(2.43%)
7. Area Unit_4 and Sex	Match cut-off weight = 14.40	As for pass 4	432 links from 16,302 records [5 DA]	(0.52%)
CLERICAL REVIEW	Conducted in SAS		866 additional links	(1.05%)
	Removal of 223 duplicates		223 duplicates removed	(-0.27%)
TOTAL			**67,147 links from**	**81.48%**

Pass and blocking variable(s)	Main match specifications	Matching variables	Links from each pass (includes duplicates)	% total mortality records linked
			82,408 records	

I.6.3 The final m and u probabilities and variable weightings

Table 5 lists the u and m probabilities for the pass 1 match run. Note that although the agreement and disagreement weights are similar for all passes, they do vary. Table 6 is indicative only of the agreement and disagreement weights for other passes.

Table 5: *u* and *m* probabilities, and agreement and disagreement weights for matching variables for the pass 1*

Matching variable	Value	*m* probability	*u* probability	Agreement weight	Disagreement weight
Sex	1 = Male	0.99	0.49	1.02	-5.67
	2 = Female	0.99	0.51	0.95	-5.60
Day of Birth	Range 1 to 31	0.97	Mainly 0.03	4.80 to 5.68	-5.03 to -5.00
Month of Birth	Range 1 to 12	0.98	0.08 to 0.09	3.45 to 3.67	-5.52 to –5.50
Year of birth	1910	0.99	0.00	9.41	-6.64
(examples by	1920	0.99	0.01	7.61	-6.63
decade)	1930	0.99	0.01	7.11	-6.63
	1940	0.99	0.01	6.72	-6.63
	1950	0.99	0.01	6.28	-6.62
	1960	0.99	0.02	5.97	-6.62
	1970	0.99	0.01	6.11	-6.62
	1980	0.99	0.01	6.21	-6.62
	1990	0.99	0.02	5.94	-6.62
	2000	0.99	0.01	6.12	-6.62
Country of Birth	1 = NZ	0.85	0.80	0.09	-0.44
	2 = Australia	0.85	0.02	5.78	-2.71
	3 = British Isles	0.85	0.06	3.74	-2.64
	4 = Europe	0.85	0.02	5.68	-2.71
	5 = Pacific Is	0.85	0.03	4.71	-2.68
	6 = Africa	0.85	0.01	6.36	-2.72
	7 = Americas	0.85	0.01	6.92	-2.72
	8 = Asia	0.85	0.04	4.24	-2.67
	9 = Other	0.85	0.00	8.25	-2.73
Maori	1 = Maori	0.80	0.14	2.48	-2.09
	0 = non-Maori	0.85	0.85	0.01	0.00
Pacific	2 = Pacific	0.80	0.06	3.67	-2.22
	0 = non-Pacific	0.93	0.93	0.01	0.00
Asian	4 = Asian	0.80	0.06	3.64	-2.22
	0 = non-Asian	0.92	0.92	0.01	0.00
Other	5 = Other	0.80	0.80	0.01	-0.01
Ethnicities	0 = non-Other	0.80	0.19	2.07	-2.01
Fix for Asian	4 = Asian born in		0.04	..	-3.58

Matching variable	Value	*m* probability	*u* probability	Agreement weight	Disagreement weight
ethnicity and country of birth combination †	Asia on Census 8 = Asian born in Asia on Mortality		0.00		-3.64
Fix for Pacific ethnicity and country of birth combination†	2 = Pacific born in Pacific Islands on Census		0.03	..	-3.60
	5 = Pacific born in Pacific Islands on Mortality		0.00		-3.64

* pass 1 was the first run with meshblock 1 and obtained the most links. Other passes have very similar probabilities and weights to pass 1.

† as these variables were set up to always disagree, or be missing, only the disagreement weights are presented. The disagreement weight used by QualityStage™ is the highest (closest to 0) of the disagreement weights for the different values.

I.6.4 Accuracy of the record linkage (false positives and positive predictive value)

Positive predictive values were estimated using the duplicate method. The PPV for passes 1 to 6 is shown in Table 6. The overall PPV for linkage of the 2001 cohort was estimated as over 97%. It is difficult to estimate a more precise overall PPV because of the small numbers linked in some passes and the very selective picking of acceptable matches in the Clerical Review stage.

Table 6: Positive predictive value (PPV) and expected number of false positives (E[FP]) for passes 1 to 6 of the final match-run, 2001-04

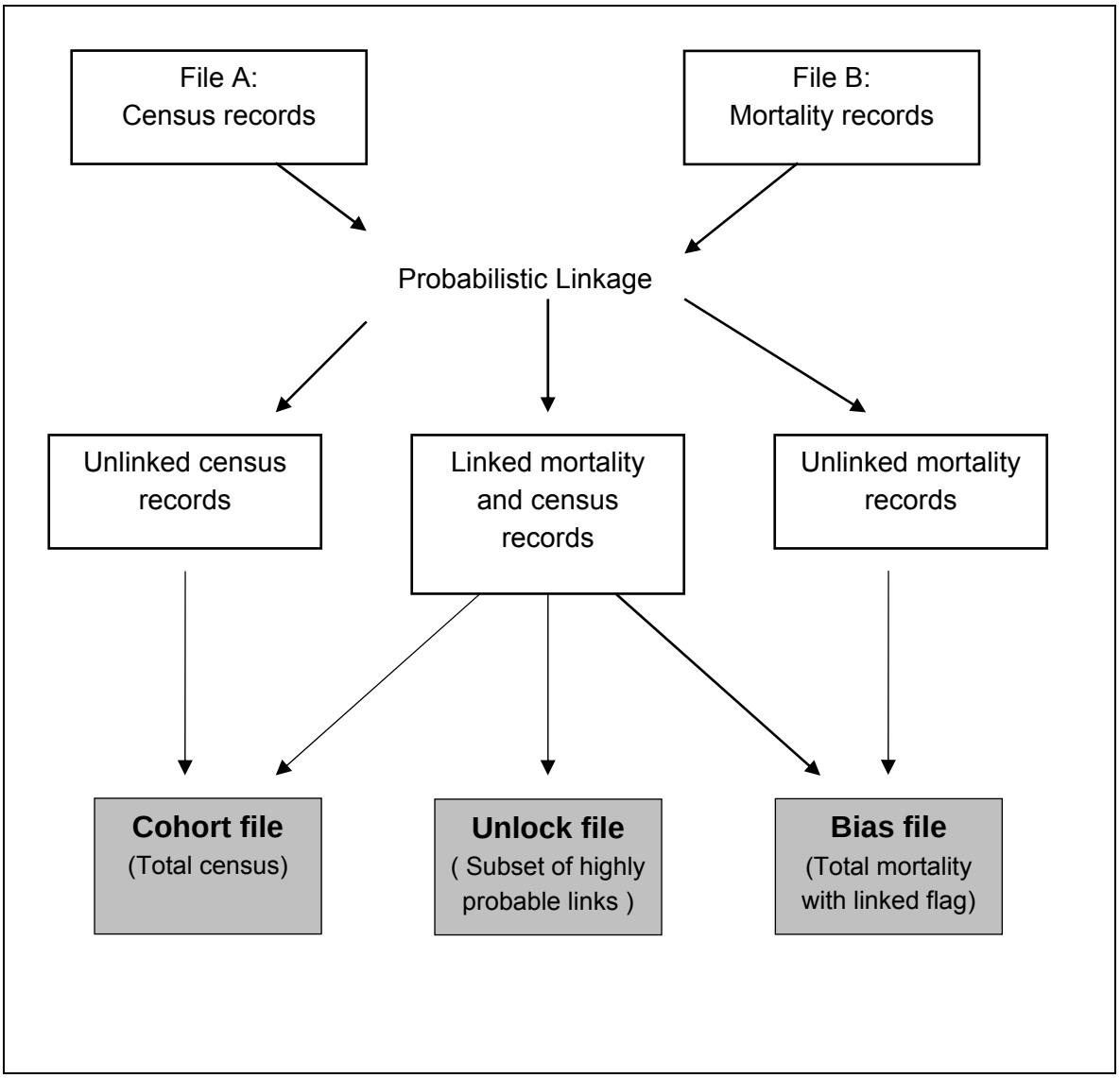
Pass	Blocking Variable	Link pairs	Duplicate method E[FP]	Duplicate method PPV
1	Meshblock 1	46,798	185	99.6%
2	Meshblock 2	3,382	229	93.2%
3	Meshblock 3	118	0	..
4	Sex and Area Unit 1	7,493	672	91.0%
5	Sex and Area Unit 2	6,277	382	93.9%
6	Sex and Area Unit 3	2,004	281	86.0%

I.7. Cohort, bias and unlock files

The linkage process produced three files that were released for use in the data lab at SNZ: the cohort, bias and unlock datasets.

Variables included in the three NZCMS 2001-04 datasets can be found in the Appendix.

Figure 6: Summary of flow of records through the linkage process



Part II Weighting of 2001-04 Cohort to Adjust for Linkage Bias

II.1. Introduction

The NZCMS used anonymous and probabilistic record linkage of census records with mortality records to create the 2001-04 cohort. The methods for linking the census and mortality records are described in Part I of this report. The record linkage process was successful in linking 81.5% of eligible mortality records to a census record.

If the probability of linkage varies by factors of interest (e.g. age, ethnicity, socio-economic position) then the linkage will result in biased estimates of association between those factors and mortality. Incomplete linkage between census and mortality files means that the vital status of some members of the census cohort are misclassified as alive three years after the census when in reality they have died. In previous cohorts, when the mortality and census records were stratified by demographic characteristics (age, sex and ethnicity), geographical distribution (rural/urban and Regional Health Authority), socioeconomic measures (NZ Deprivation Index), time following census and the level of mobility in the area unit, the proportion of mortality records linked varied by strata (i.e. linkage bias).

In order to compensate for linkage bias the records were weighted. The weighting will adjust for misclassification of the mortality outcome in the future cohort analyses. The method used to calculate the weighting factors is described in the following sections.

II.2. Description of Bias Dataset

A detailed description of the variables on the bias dataset is given in Table 54, in the appendices. In summary, the variables include sex, age at census and age at death, ethnicity, rurality of place of residence, Deprivation Index (NZDep01), Social Fragmentation Index, level of mobility in area unit, Cause of Death, and a flag indicating whether or not the record was linked to a census record. The Ethnicity variable is a derived variable, whereby ethnicity has been grouped according to the Prioritised, Sole, and Total ethnic groupings, with four categories – Māori, Pacific, Asian and NonMPA (other).

The social fragmentation index was developed in 2005 as a measure of the degree of social fragmentation at the level of the neighbourhood (which in this case is the census area unit). It was included with the bias dataset because of the possibility that residential mobility reduces the likelihood of the linkage of a mortality record to a census record. "Level of mobility" groups area units according to the proportion of respondents in the area unit who did not live in the same area unit at the time of the previous census. As the linking process can only link records within a meshlock or area unit, a high level of residential mobility is likely to be associated with low levels of linkage.

II.3. Linkage by social and demographic variables

The overall percentage of deaths linked for the 2001-04 cohort was 81.5%. The total number of deaths and proportion of mortality records linked by Sex, Age, Ethnicity, NZ Deprivation Index, Social Fragmentation Index, Rurality, Regional Health Authority, Broad Cause of Death Categories and time lapsed after census are shown in Table 7.

Linkage was lowest for:

1. Ages 25-34 years
2. External causes of death (unintentional and intentional injury, including suicide)
3. People living in rural areas
4. People living in areas of high residential mobility
5. People living in the Northern RHA (North of Bombay hills)
6. People living in high deprivation areas
7. People living in areas with a high social fragmentation score
8. Pacific and Asian people, (Maori were intermediate and nMPA had the highest rates of linkage)

Much of the difference in linkage rates by geographical variables and New Zealand Deprivation Index was due to differences in population distribution by age, sex and ethnicity. This finding is consistent with results reported for the earlier cohorts.(Blakely et al. 1999; Fawcett et al. 2002; Hill et al. 2002) Rurality, level of mobility, and cause of death were also important independent risk factor for linkage.

Furthermore, there was a significant interaction in linkage rates for age and sex groups. Linkage was higher for females compared to males for people aged less than 65 years, similar between sexes for ages 65-74 years, and linkage rates were less for females than males for ages 75 years and older.

Time since the census did not affect the likelihood of a mortality record being linked, once other factors were taken into account.

Table 7: Number of deaths and percentage of mortality records linked to a census record by sex, age group, and various socioeconomic and demographic variables, 2001-04

	Males		Females	
	% linked	n	% linked	n
Ethnicity (Prioritised)				
Maori	73.4	4,125	77.2	3,390
Pacific	72.8	1,323	72.6	1,101
Asian	71.0	600	73.3	552
non-Māori non-Pacific non-Asian	82.2	34,998	83.2	36,147
Ethnicity (Total)				
Maori	73.4	4,125	77.2	3,390
Pacific	72.5	1,362	72.8	1,116
Asian	71.4	633	73.9	570
non-Māori non-Pacific non-Asian	82.1	35,376	83.2	36,471
Age Group				
0-14 yrs	73.4	381	77.2	261
15-34 yrs	59.4	1,743	68.8	819
35-49 yrs	69.8	2,595	77.4	1,776
50-64 yrs	79.4	6,873	81.9	4,791
65-74 yrs	83.7	10,011	83.6	6,774
75-84 yrs	84.1	12,831	82.8	13,311
>=85 yrs	82.0	6,612	82.8	13,452
NZ Deprivation Index				
Quintiles 1 and 2 (low)	81.7	13,707	82.6	13,677
Quintile 3	82.1	8,586	83.0	9,309
Quintile 4	80.5	9,660	82.3	9,834
Quintile 5 (high)	78.7	9,093	80.8	8,367
Level of Mobility*				
<45%	83.3	6,951	83.9	6,348
45-54%	81.0	17,958	82.9	17,412
55-69%	80.2	14,448	81.4	15,489
>=70%	74.2	1,692	78.0	1,941
Social Fragmentation Index				
Quintile 1	80.5	3,798	81.9	3,012
Quintile 2	81.0	7,686	82.4	7,179
Quintile 3	82.2	9,243	83.5	9,345
Quintile 4	81.1	10,962	82.6	10,980
Quintile 5	79.2	9,357	80.9	10,677
Regional Health Authority				
Northern	78.8	12,282	80.5	12,249
Midland	81.3	8,949	82.2	8,355
Central	81.3	10,227	82.7	10,692
Southern	82.5	9,591	84.0	9,894
Rurality				
Major Urban	81.1	31,401	82.5	33,378
Minor Urban	82.2	6,033	82.6	5,532
Rural	76.4	3,612	77.7	2,283

	Males		Females	
	% linked	n	% linked	n
Cause of Death				
Cancer	82.4	12,333	82.6	10,857
CVD excl IHD	82.3	6,036	82.8	8,829
IHD	82.7	9,723	83.7	8,826
Respiratory	83.2	3,117	82.8	2,685
Congenital, Perinatal, SIDS	72.6	192	79.6	156
Unintentional Injury	67.3	1,992	78.3	1,179
Suicide	63.6	1,119	67.9	390
Violent	56.6	108	70.0	60
Other Causes	80.4	6,432	81.0	8,205
Time lapse since census night				
0-5 months	78.8	6,591	80.2	6,594
6-11 months	81.5	6,750	82.6	6,795
12-17 months	81.5	7,107	84.1	6,909
18-23 months	80.4	6,453	81.9	6,771
24-29 months	81.6	7,104	83.1	7,134
30-35 months	80.9	7,044	81.7	6,993

∗ Percentage of people in area unit who did not live in the same census unit five years ago.

To determine which variables should be used to stratify the dataset for the creation of weights, the independent association of each variable with the probability of linkage using multivariate regression was looked at. A number of models were investigated. Table 8 shows the relative risk of linkage for the final model with all other variables entered as covariates and with an interaction for sex and age, allowing for by cross-classifying sex and age, and setting males aged greater than or equal to 85 years as the reference category. Other interactions were also investigated however no others were retained.

Table 8: Risk Ratio for linkage

	OR (95% CI)				
Ethnicity (prioritised)					
Maori	1.15	(1.04 - 1.28)			
Pacific ∗	1.00				
Asian	0.95	(0.81 - 1.12)			
non-Māori non-Pacific non-Asian	1.15	(1.04 - 1.28)			
Age Group	**Males**		**Females**		
0-14 yrs	0.87	(0.68 - 1.11)	1.38	(0.60 - 3.17)	
15-34 yrs	0.48	(0.42 - 0.54)	1.92	(1.20 - 3.06)	
35-49 yrs	0.64	(0.57 - 0.71)	1.91	(1.28 - 2.84)	
50-64 yrs	0.94	(0.86 - 1.02)	1.29	(0.93 - 1.78)	
65-74 yrs	1.17	(1.07 - 1.27)	0.94	(0.69 - 1.28)	
75-84 yrs	1.16	(1.07 - 1.25)	0.80	(0.60 - 1.06)	

	OR (95% CI)			
>=85 yrs *	1.00		1.06	(0.98 - 1.14)
NZ Deprivation Index				
Quintiles 1 and 2 (low)	1.05	(1.00 - 1.10)		
Quintile 3 and 4	1.01	(0.95 - 1.06)		
Quintile 5 (high) *	1.00			
Level of Mobility				
<45%	1.57	(1.43 - 1.72)		
45-54%	1.42	(1.31 - 1.54)		
55-69%	1.33	(1.23 - 1.45)		
>=70% *	1.00			
Regional Health Authority				
Northern	0.91	(0.86 - 0.96)		
Midland	0.99	(0.94 - 1.05)		
Central	0.96	(0.91 - 1.01)		
Southern *	1.00			
Rurality				
Rural	0.74	(0.69 - 0.79)		
Urban *	1.00			

* =Reference category

Of note, the level of mobility of the decedent's area unit was a strong prediction of linkage success. This is a variable we did not explicitly test in previous cohorts, although it is likely that without "level of mobility" other correlated variables such as age, ethnicity, and NZDep would have strong associations.

II.4. Methods for calculation of weights to adjust for linkage bias

II.4.1 Summary

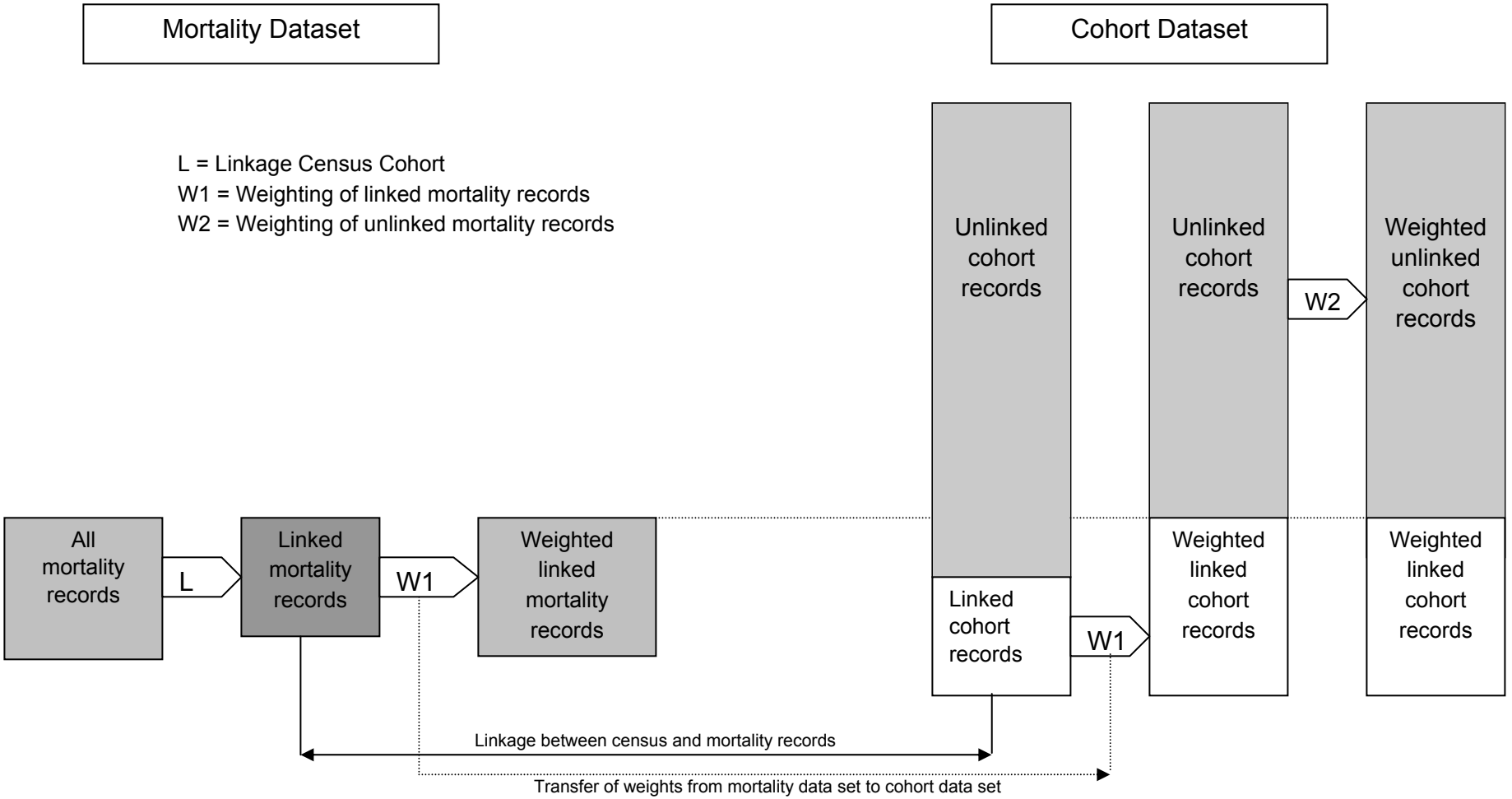
The method for weighting the cohort was essentially similar to that used for previous NZCMS cohorts.(Fawcett et al. 2002) A two-step process was used to create the weights to adjust for linkage bias. The linked mortality records were weighted in order to represent the full mortality records.

This entailed two weighting processes.

1. Based on a dataset of all mortality records, weights were created that were the inverse of the probability of linkage within socio-demographic strata.
2. The unlinked records were weighted to adjust for the non-linkage of some mortality records.

This process is summarised in Figure 7.

Figure 7: Diagrammatic summary of the linkage weighting process



II.4.2 Stratification of the data by demographic variables

To correctly weight each linked record on the census-mortality data-sets, weights needed to be applied that varied by demographic strata. The strata that we used for the initial weighting were:

- Sex (male, female)
- Age group (7 groups according to age at census night; 0-14, 15-34, 35-49, 50-64, 65-74, 75-84 and 85+ years)
- Ethnic group (4 groups based on the prioritised classification).
- Level of Mobility (4 groups)
- Cause of death (6 groups)
- Rurality (rural, urban).
- RHA (4 groups)

These variables were chosen because in the multivariate regression they contributed most to the reduction in deviance. The Deprivation and Social Fragmentation indexes were not included as the reduction in deviance was much less for these variables than for others included in the model.

Potentially this stratification regime could result in 10,752 separate strata. However, to avoid weights of zero (no deaths in strata), or undefined weights (no linked mortality records in strata), strata were amalgamated to obtain a minimum strata size. The decision to combine strata was based on the number of deaths and proportion linked in each stratum.

Age and Ethnic groups were never combined, and Sex groups were combined only when absolutely necessary to ensure cells of adequate size.

The success of the initial weighting was investigated by comparing the weighted number of linked deaths and the known number of actual deaths, by strata age groups (broad groupings and five year age groupings), sex, ethnicity, RHA, rurality, cause of death and Territorial Authority. The weighted numbers were found to be very accurate for the broad groupings of variables but less so for the detailed groupings. The main exception to this was for ages less than 35 years. The problems with the weightings in this age group arose because the pattern of linkage was very variable even within five-year age groupings for less than 35 years. To improve the function of the weights the stratification strategy was changed. The deaths were stratified by 5-year age group, sex and ethnicity, and then where numbers allowed, by cause of death, and urban/rural place of residence.

In order to produce weights that ensured weighted numbers of linked deaths were the same as the known number of actual deaths, a secondary adjustment to the original weightings was done. This adjustment ensured that the weights accurately predicted the total number of deaths for strata of age (5 year groups), sex, and ethnicity (prioritised definition). The unadjusted weight is ‘W_ Base’ and the adjusted weight is ‘W_AgEthAdj’. The weighted

and raw counts of death for various strata are given in Table 9. Weighted numbers of linked deaths were within one percent of actual numbers of deaths in most strata, also shown in Table 9.

Table 9: Weighted numbers of linked deaths and actual deaths on Bias data-set, 2001-04

	Linked	Actual Deaths	Weighted deaths (weight=W_Base)	Weighted deaths (weight =w_AgEthAdj)
Sex				
Males	33,174	41,046	41,094	40,866
Females	33,891	41,190	41,214	41,031
Ethnicity (Prioritised)				
Maori	5,643	7,515	7,515	7,431
Asian	1,765	2,427	2,433	2,409
Pacific	831	1,152	1,158	1,131
nonMPA	58,830	71,145	71,202	70,926
Ethnicity (Total)				
Maori	5,643	7,515	7,515	7,431
Pacific	1,799	2,478	2,490	2,466
Asian	873	1,203	1,218	1,194
NonMPA	59,370	71,847	71,937	71,652
Age Group				
0-14 yrs	483	645	648	633
15-34 yrs	1,599	2,562	2,571	2,523
35-49 yrs	3,184	4,371	4,380	4,311
50-64 yrs	9,382	11,667	11,688	11,625
65-74 yrs	14,043	16,785	16,797	16,746
75-84 yrs	21,815	26,142	26,154	26,061
>=85 yrs	16,557	20,061	20,067	20,001
Age Group (detailed)				
0-4 years	188	249	255	249
5-9 years	99	132	135	129
10-14 years	194	261	258	252
15-19 years	405	600	663	651
20-24 years	300	531	492	480
25-29 years	360	609	582	570
30-34 years	537	822	834	816
35-39 years	711	1,065	1,002	987
40-44 years	1,053	1,446	1,452	1,425
45-49 years	1,422	1,866	1,929	1,896
50-54 years	2,325	3,000	2,919	2,904
55-59 years	2,904	3,612	3,618	3,600
60-64 years	4,152	5,055	5,148	5,118
65-69 years	5,676	6,828	6,825	6,801
70-74 years	8,370	9,957	9,972	9,942
75-79 years	10,809	12,813	12,945	12,903
80-84 years	11,007	13,332	13,206	13,158
85-89 years	9,771	11,904	11,844	11,805
90-94 years	5,094	6,192	6,168	6,150
95-99 years	1,488	1,722	1,806	1,800
100+ years	201	240	255	252
NZ Deprivation Index				
Dep 1-4	22,503	27,387	27,486	27,363
Dep 5-6	14,779	17,898	18,009	17,928

	Linked	Actual Deaths	Weighted deaths (weight=W_Base)	Weighted deaths (weight =w_AgEthAdj)
Dep 7-8	15,869	19,494	19,419	19,326
Dep 9-10	13,921	17,463	17,391	17,283
Social Fragmentation Index				
Quintile 1	5,524	6,810	6,834	6,798
Quintile 2	12,138	14,865	14,796	14,727
Quintile 3	15,397	18,585	18,702	18,615
Quintile 4	17,963	21,945	22,020	21,906
Quintile 5	16,047	20,034	19,953	19,854
Percent Mobility				
<45%	11,115	13,296	13,467	13,401
45-54%	28,981	35,370	35,394	35,223
55-69%	24,204	29,940	29,889	29,739
>=70%	2,772	3,636	3,558	3,540
RHA				
Northern	19,541	24,534	24,489	24,354
Midland	14,146	17,304	17,355	17,262
Central	17,155	20,919	20,958	20,859
Southern	16,230	19,485	19,506	19,422
Rurality				
Major Urban	53,005	64,782	64,887	64,572
Minor Urban	9,529	11,562	11,538	11,478
Rural	4,535	5,895	5,886	5,847
Cause of Death				
Cancer	19,127	23,190	23,214	23,100
CVD excl IHD	12,278	14,865	14,883	14,820
IHD	15,420	18,549	18,561	18,486
Respiratory	4,817	5,802	5,802	5,778
Cong,Peri,SIDS	261	345	342	339
Unintentional Injury	2,261	3,168	3,180	3,144
Suicide	976	1,509	1,512	1,491
Violent	101	165	168	165
Other Causes	11,819	14,637	14,646	14,577
Detailed Cause of Death				
Cancers				
Stomach Ca	754	915	924	921
Colorectal Cancer	2,781	3,384	3,354	3,339
Pancreas Ca	743	888	894	891
Lung/Bronchus Cancer	3,601	4,347	4,374	4,350
Melanoma	638	762	771	771
Breast Cancer	1,539	1,854	1,878	1,866
Prostate Cancer	1,437	1,716	1,719	1,716
Brain/Nervous System Ca	513	651	642	636
Other Cancer	7,124	8,676	8,652	8,610
CVD				
IHD	15,420	18,549	18,561	18,486
Other Heart Disease	3,893	4,707	4,761	4,737
Cerebrovascular Disease	6,740	8,208	8,139	8,106
Other Cardiovascular Disease	1,648	1,953	1,983	1,977
External Causes				
Unintentional Injury other than RTC	1,382	1,869	1,854	1,839
RTC	882	1,302	1,323	1,305

	Linked	Actual Deaths	Weighted deaths (weight=W_Base)	Weighted deaths (weight =w_AgEthAdj)
Suicide	976	1,509	1,515	1,491
Violent	101	165	168	165
Other Causes				
Communicable Diseases	533	672	672	663
Diabetes	1,931	2,382	2,409	2,397
Pnuemonia/Influenza	1,006	1,233	1,236	1,230
COPD	4,134	4,986	4,965	4,947
Asthma	178	213	219	219
Other Respiratory	508	606	618	615
Congenital	245	315	318	312
Perinatal	6	15	6	6
SIDS	12	18	18	15
Other Causes	8,349	10,350	10,329	10,281

II.4.3 Weighting of non-linked census records

Linked cohort members represent a person who was alive at the time of the 2001 census but died in the subsequent three years. Applying weights to the linked cohort members compensates for the incomplete linkage of the mortality data-set to the census, and allows the calculation of mortality rates for the total population. It is however also necessary to weight down the unlinked cohort members to allow for the fact that some of the unlinked census records actually did die during follow-up.

The weighting thus far has addressed only the linked census-mortality records, which account for approximately one percent of the total number of census records in each cohort. In order for the weighted sum of *all* census records in each cohort to still equal the total number of census records, each *un*linked census record must also be assigned a weight of (usually) just less than 1.0. The unlinked mortality records represent a census record for which the mortality outcome is misclassified as not dead. The true number of cohort members not dead at the end of the follow-up period can be estimated by subtracting the number of weighted number of deaths on the census data from the total number of census cohort records. See Technical Report 5 for a more detailed description of the method- (Fawcett et al. 2002).

As with the linked records two weights were calculated (W_Base and W_AgEthAdj). Any other linkage weights produced in the future for specific analyses will also require separate weighting of the unlinked cohort records.

II.5. Limitations of the weighting and conclusions

The weightings described here produce relatively stable adjustments for linkage bias. However, the performance of the weights at a sub-national level has not been investigated. Table 55 in the appendices give counts of linked actual and weighted deaths by territorial authority, regional council, and district health board. The performance of the weights to adjust for linkage bias will therefore need to be checked and an area based scaling of the Base weight may be required for these analyses.

The use of linkage weights should enable adjustment for linkage bias and the calculation of stratum specific mortality rates for a full range of socio-economic variables.

It is also noted that in the weighting of 2001-04 records, we used the “level of mobility” variable. Having done so, NZDep no longer contributed to explaining linkage success, and was not included as a weighting variable. This creates a discontinuity of methods between the earlier and 2001-04 cohorts, but also an adherence to “best performance” in the 2001-04 cohort. We decided the latter principle mattered most.

Part III Calculation of ‘Unlock Ratios’

Introduction

This Section describes the calculation of ratios to adjust for the undercounting of Māori , Pacific and Asian deaths in the New Zealand Death records for the 2001-04 NZCMS cohort.

The analyses in this technical report are based on the analysis of the 2001-04 Unlock Dataset. The unlock dataset is a subset of mortality records that were successfully linked back to the 2001 census data for which there is a high probability that the links were in fact true links. The production of the unlock dataset is described in Part I of this technical report. (see page 53).

III.1. Variables included in the unlock file

Table 58, in the appendices, gives details of the variables in the 2001-04 Unlock Dataset.

This section of the technical report

1. Describes the method used to calculate the adjustment ratios
2. Provides a list of tables of adjustment ratios for the 2001-04 census-mortality cohort.
3. Discusses the possibility of misclassification bias and residual systemic bias in the analyses

For a more detailed justification of the methods and advice and guidance on the use of the results in this report please refer to the earlier technical report for the first four cohorts. (Ajwani et al. 2002)

III.2. Summary of Methods to Calculate Adjustment Ratios

III.2.1 Weighting of Unlock DataSet to represent all mortality records

The first step in the calculation of mortality data was to weight the subset of highly probable links to represent the full mortality dataset. A flag on the dataset including all mortality records indicated whether the record was also on the unlock data set (that is the subset of highly probable links).

Just as weights were created to weight the linked records to represent the total mortality dataset, weights were created to weight up the highly probable links to represent the total mortality dataset. The weighting was done within strata of:

- Sex (male, female)
- Age group (7 groups according to age at census night; 0-14, 15-29, 30-44, 45-64, 65-74, 75-84 and 85+ years)
- Ethnic group (4 groups based on the prioritised classification; Māori, Pacific, Asian, nonMPA).
- Level of Mobility in the area unit (4 groups; <45%, 45-54%, 55-69%, >=70% of residents in the area unit who did not live in the same area unit at the time of the last census)
- Cause of death (6 or 8 groups Cancer; CVD excl IHD; IHD; Respiratory;Congenital, Perinatal, SIDS; Unintentional injury; Suicide; Violent; Other Causes)
- Rurality (rural, urban).

The weight (W_unlock) was then transferred to the subset of highly probable links.

III.2.2 Calculation of Ratios to adjust for Numerator-Denominator Bias

The numerator-denominator bias was determined by cross classifying census ethnicity by the death registration form ethnicity or NHI Ethnicity. Further cross-classification was conducted by strata of sex, age at death, small area deprivation, RHA, rurality, and cause of death, in order to determine the heterogeneity of any numerator-denominator bias. The adjustment ratios were calculated based on total, prioritised and sole classifications for four ethnic

groups – Māori, Pacific, Asian, and NonMPA. Note that the Prioritised Maori ethnic group is the same as the Total Maori ethnic group. When comparisons were made between census and mortality files, the same classification scheme was used on both files (i.e total, prioritised or sole). For example, we do not report ‘sole mortality counts compared to total census counts’.

III.3. Unlock Ratios for Mortality Data

III.3.1 Full Population

Table 10 shows the number of deaths in 2001-04 according to the total ethnicity definition, for both the 2001 census ethnicity data and the 2001-04 mortality data. The data are largely concordant. For example, of the 82,404 eligible mortality records, our weighted estimation using the HPL data-set estimates that 7,419 of these deaths were Māori on the census form (using total concept) and 7,539 were Māori on the NMDS mortality data. That is, mortality data actually slightly overestimates the number of total Māori deaths (using the 2001 census as the gold standard), with a census-mortality ratio of 0.98. The estimated difference in counts for non-Māori between census and mortality data is necessarily the same as the difference for Māori, ie 120 or 117 (due to random rounding of all SNZ data to a near multiple of three, number will not always appear to be exactly same in tabular output). However, because there are so many more non-Māori deaths, the census to mortality ratio rounded to two decimal places is actually 1.00.

For the total Pacific counts, mortality data also appears to overestimate the 'true' census count by about 2% (ie, ratio of 0.98), but there appears to be a 2% underestimate of the total Asian deaths on mortality data (ie, ratio of 1.02). Due to likely imprecision in our linkage and weighting schema, it is probably safest to conclude that the there is very little difference – if any – between census and mortality data in 2001-04 for Māori, Pacific and Asian 'total' definitions.

Table 10: Census Total ethnicity by death registration form Total ethnicity, 2001-04 NZCMS cohort

Ethnicity	By Variable	Census Ethnicity	Census Deaths	Mortality Deaths	Census to Mortality Ratio
Total Ethnicity	All Data	Maori	7,419	7,539	0.98
		Non-Maori	74,985	74,868	1.00
		Pacific	2,448	2,493	0.98
		Non-Pacific	79,956	79,914	1.00
		Asian	1,236	1,215	1.02
		Non-Asian	81,171	81,189	1.00
		NonMPA	73,089	72,051	1.01
		Maori/Pacific/Asian	9,315	10,356	0.90

The last panel in Table 10 gives the results for a total nonMPA group – that is anyone who was identified as an ethnic group other than Māori, Pacific or Asian. (This is not a commonly used group.) Due to large numbers, the

census to mortality ratio is close to 1.0 (ie, 1.01). But for the complementary group of people who reported only ethnicities within the three Māori, Pacific and Asian categories, there were notably less on the census data (ie, ratio of 0.90). This arises because more people tend to self-identify as two or more ethnic groups on 2001 census data compared to that elicited on mortality data.

Table 11 shows the data cross-classified by prioritised ethnicity. As the ethnic groups are now mutually exclusive, it is possible to present the table in a cross-classified manner – hence the variation in layout from the previous table for total ethnicity results. Overall there was no substantial difference between the census and mortality counts. That is all ratios are close to 1.0.

Table 11: Census prioritised ethnicity by death registration form prioritization ethnicity, 2001-04 NZCMS cohort

		Death registration form Prioritised Ethnicity					
		Maori	Pacific	Asian	NonMPA	Total	
By Variable	Census Prioritised Ethnicity	Deaths	Deaths	Deaths	Deaths	Deaths	Census to Mortality Ratio
All Data	Maori	6,621	21	6	774	7,419	0.98
	Pacific	36	2,250	6	81	2,373	0.97
	Asian	6	42	1,059	69	1,170	1.01
	NonMPA	879	126	87	70,353	71,442	1.00
	Total	*7,539*	*2,439*	*1,155*	*71,274*	.	.

When 'sole' ethnic categorisation is used (Table 12), the mortality data overcounts the number of Maori deaths relative to the census by about 16% (ie, [1.0 / 0.86] – 1 = 0.16). There is also a small (3%) over count of Pacific deaths. In practice, this means that if the 'sole' categorisation of ethnicity is used to calculate mortality rates using unlinked data, the numerator-denominator bias will bias the Māori and Pacific rates upwards. The reason that there is more bias with the sole compared to total or prioritised definitions is that fewer 2001-04 deaths than expected have two or more ethnicities on their death registration form, resulting in high sole ethnicity counts (relative to the 2001 census).

Table 12: Census sole ethnicity by death registration form sole ethnicity, 2001-04 NZCMS cohort

		Death registration form Sole Ethnicity					
		Maori	Pacific	Asian	Remainder	Total	
By Variable	Census Sole Ethnicity	Deaths	Deaths	Deaths	Deaths	Deaths	Census to Mortality Ratio
All Data	Maori	5,487	9	.	435	5,931	0.86
	Pacific	18	2,067	6	105	2,196	0.97
	Asian	.	15	996	90	1,098	1.01

		Death registration form Sole Ethnicity					
		Maori	Pacific	Asian	Remainder	Total	
By Variable	Census Sole Ethnicity	Deaths	Deaths	Deaths	Deaths	Deaths	Census to Mortality Ratio
	Remainder	1,392	183	87	71,520	73,179	1.01
	Total	*6,891*	*2,274*	*1,086*	*72,153*	.	.

The remaining sections in this Chapter present the same tables as above, but separately by strata of sex, age, small area deprivation, RHA, rurality, and cause of death.

III.3.2 By Sex

There was no notable difference in unlock ratios by sex, with the possible exception of Pacific sole results (Table 13).

Table 13: Census by death registration form stratified by sex, 2001-04 NZCMS cohort. TOTAL ethnicity

Ethnicity	Sex	Census Ethnicity	Census Deaths	Mortality Deaths	Census to Mortality Ratio
Total Ethnicity	Males	Maori	4,095	4,140	0.99
		Non-Maori	37,059	37,014	1.00
		Pacific	1,365	1,371	1.00
		Non-Pacific	39,789	39,783	1.00
		Asian	681	642	1.06
		Non-Asian	40,470	40,512	1.00
		NonMPA	36,042	35,499	1.02
		Maori/Pacific/Asian	5,112	5,658	0.90
	Females	Maori	3,324	3,396	0.98
		Non-Maori	37,923	37,854	1.00
		Pacific	1,086	1,122	0.97
		Non-Pacific	40,164	40,128	1.00
		Asian	552	573	0.97
		Non-Asian	40,698	40,680	1.00
		NonMPA	37,047	36,552	1.01
		Maori/Pacific/Asian	4,203	4,701	0.89

Table 14: Census by death registration form stratified by sex, 2001-04 NZCMS cohort. PRIORITISED ethnic groups

		Death registration form Prioritised Ethnicity					
		Maori	Pacific	Asian	NonMPA	Total	
Sex	Census Prioritised Ethnicity	Deaths	Deaths	Deaths	Deaths	Deaths	Census to Mortality Ratio
Males	Maori	3,627	6	6	462	4,095	0.99
	Pacific	18	1,245	6	51	1,314	0.99
	Asian	.	27	567	45	636	1.05
	NonMPA	495	57	33	34,527	35,109	1.00
	Total	*4,140*	*1,332*	*603*	*35,079*	.	.
Females	Maori	2,997	15	.	315	3,324	0.98
	Pacific	15	1,008	6	30	1,059	0.96
	Asian	6	15	492	24	534	0.97
	NonMPA	384	69	54	35,823	36,333	1.00
	Total	*3,396*	*1,107*	*552*	*36,195*	.	.

Table 15: Census by death registration form stratified by sex, 2001-04 NZCMS cohort. SOLE ethnic groups

		Death registration form Sole Ethnicity					
		Maori	Pacific	Asian	Remainder	Total	
Sex	Census Sole Ethnicity	Deaths	Deaths	Deaths	Deaths	Deaths	Census to Mortality Ratio
Males	Maori	3,000	6	.	243	3,246	0.86
	Pacific	9	1,137	6	66	1,215	0.99
	Asian	.	9	531	51	591	1.04
	Remainder	786	84	33	35,199	36,105	1.02
	Total	*3,792*	*1,233*	*564*	*35,562*	.	.
Females	Maori	2,484	6	.	192	2,685	0.87
	Pacific	12	933	6	36	981	0.94
	Asian	.	6	462	39	507	0.97
	Remainder	606	99	54	36,321	37,077	1.01
	Total	*3,102*	*1,041*	*519*	*36,588*	.	.

III.3.3 By Age

There were minor differences in unlock ratios by age, but probably randomly so rather than systematically.

Table 16: Census by death registration form stratified by age groups, 2001-04 NZCMS cohort. TOTAL ethnicity

Ethnicity	By Variable	Census Ethnicity	Census Deaths	Mortality Deaths	Census to Mortality Ratio
Total Ethnicity	0-14 yrs	Maori	195	189	1.03
		Non-Maori	330	336	0.98
		Pacific	63	60	1.02
		Non-Pacific	459	462	1.00
		Asian	18	21	0.91
		Non-Asian	504	501	1.00
		NonMPA	354	309	1.14
		Maori/Pacific/Asian	171	213	0.80
	15-24 yrs	Maori	480	495	0.97
		Non-Maori	1,185	1,173	1.01
		Pacific	174	156	1.10
		Non-Pacific	1,497	1,512	0.99
		Asian	87	75	1.16
		Non-Asian	1,581	1,593	0.99
		NonMPA	1,161	1,062	1.10
		Maori/Pacific/Asian	507	606	0.83
	25-44 yrs	Maori	786	792	0.99
		Non-Maori	2,202	2,193	1.00

Ethnicity	By Variable	Census Ethnicity	Census Deaths	Mortality Deaths	Census to Mortality Ratio
		Pacific	237	234	1.01
		Non-Pacific	2,748	2,754	1.00
		Asian	114	105	1.09
		Non-Asian	2,874	2,886	1.00
		NonMPA	2,064	1,947	1.06
		Maori/Pacific/Asian	921	1,038	0.89
	45-64 yrs	Maori	2,589	2,637	0.98
		Non-Maori	9,891	9,843	1.00
		Pacific	732	726	1.01
		Non-Pacific	11,748	11,757	1.00
		Asian	282	261	1.09
		Non-Asian	12,201	12,222	1.00
		NonMPA	9,348	9,048	1.03
		Maori/Pacific/Asian	3,132	3,435	0.91
	65-74 yrs	Maori	1,863	1,896	0.98
		Non-Maori	13,368	13,335	1.00
		Pacific	558	579	0.97
		Non-Pacific	14,676	14,655	1.00
		Asian	282	285	0.98
		Non-Asian	14,949	14,946	1.00
		NonMPA	12,852	12,648	1.02
		Maori/Pacific/Asian	2,382	2,583	0.92
	75-84 yrs	Maori	1,098	1,089	1.01
		Non-Maori	24,426	24,432	1.00
		Pacific	480	522	0.92
		Non-Pacific	25,041	25,002	1.00
		Asian	297	297	1.00
		Non-Asian	25,227	25,227	1.00
		NonMPA	23,937	23,775	1.01
		Maori/Pacific/Asian	1,587	1,746	0.91
	85+ yrs	Maori	411	441	0.93
		Non-Maori	23,583	23,553	1.00
		Pacific	204	213	0.96
		Non-Pacific	23,787	23,778	1.00
		Asian	156	174	0.90
		Non-Asian	23,835	23,817	1.00
		NonMPA	23,370	23,262	1.00
		Maori/Pacific/Asian	621	732	0.85

Table 17: Census by death registration form stratified by age groups, 2001-04 NZCMS cohort. PRIORITISED ethnic groups

		Death registration form Prioritised Ethnicity					
		Maori	Pacific	Asian	NonMPA	Total	
By Variable	Census Prioritised Ethnicity	Deaths	Deaths	Deaths	Deaths	Deaths	Census to Mortality Ratio
0-14 yrs	Maori	171	.	.	24	195	1.03
	Pacific	6	45	.	6	48	0.99
	Asian	.	6	12	6	15	1.09
	NonMPA	18	6	6	243	264	0.98
	Total	*189*	*48*	*15*	*270*	.	.
15-24 yrs	Maori	411	6	.	66	480	0.97
	Pacific	15	126	.	15	153	1.10
	Asian	.	6	63	9	78	1.22
	NonMPA	69	6	.	882	957	0.99
	Total	*495*	*138*	*66*	*969*	.	.
25-44 yrs	Maori	696	6	.	84	786	0.99
	Pacific	6	207	.	12	225	1.01
	Asian	6	6	96	6	105	1.06
	NonMPA	90	6	6	1,773	1,872	1.00
	Total	*792*	*225*	*96*	*1,875*	.	.
45-64 yrs	Maori	2,388	6	6	195	2,589	0.98
	Pacific	9	684	6	18	714	0.99
	Asian	.	15	231	15	261	1.08
	NonMPA	240	15	9	8,652	8,913	1.00
	Total	*2,637*	*717*	*246*	*8,883*	.	.
65-74 yrs	Maori	1,701	6	.	159	1,863	0.98
	Pacific	6	540	6	9	552	0.97
	Asian	.	6	255	9	270	0.98
	NonMPA	186	27	21	12,309	12,543	1.00
	Total	*1,896*	*573*	*273*	*12,486*	.	.
75-84 yrs	Maori	927	6	.	165	1,098	1.01
	Pacific	6	459	6	12	477	0.92
	Asian	.	9	258	18	285	0.99
	NonMPA	162	51	24	23,427	23,664	1.00
	Total	*1,089*	*522*	*288*	*23,625*	.	.
85+ yrs	Maori	327	.	.	81	411	0.93
	Pacific	.	192	.	12	204	0.95
	Asian	.	.	141	12	153	0.90
	NonMPA	111	24	30	23,061	23,223	1.00
	Total	*441*	*216*	*171*	*23,169*	.	.

Table 18: Census by death registration form stratified by age groups, 2001-04 NZCMS cohort. SOLE ethnic groups

		Death registration form Sole Ethnicity					
		Maori	Pacific	Asian	Remainder	Total	
By Variable	Census Sole Ethnicity	Deaths	Deaths	Deaths	Deaths	Deaths	Census to Mortality Ratio
0-14 yrs	Maori	102	.	.	6	108	0.72
	Pacific	.	39	.	6	45	1.04

		Death registration form Sole Ethnicity					
		Maori	Pacific	Asian	Remainder	Total	
By Variable	Census Sole Ethnicity	Deaths	Deaths	Deaths	Deaths	Deaths	Census to Mortality Ratio
	Asian	.	.	6	6	12	0.97
	Remainder	48	6	6	309	360	1.12
	Total	*147*	*42*	*12*	*321*	.	.
15-24 yrs	Maori	264	6	.	30	294	0.71
	Pacific	6	90	.	27	120	1.19
	Asian	.	6	63	9	75	1.16
	Remainder	147	9	6	1,020	1,179	1.08
	Total	*417*	*99*	*66*	*1,086*	.	.
25-44 yrs	Maori	555	6	.	45	600	0.83
	Pacific	6	192	.	12	213	1.03
	Asian	.	6	90	6	96	1.02
	Remainder	165	9	6	1,902	2,079	1.06
	Total	*726*	*207*	*93*	*1,962*	.	.
45-64 yrs	Maori	2,052	.	.	129	2,181	0.88
	Pacific	6	645	6	21	669	0.97
	Asian	.	6	222	21	249	1.07
	Remainder	432	39	12	8,898	9,378	1.03
	Total	*2,490*	*690*	*231*	*9,069*	.	.
65-74 yrs	Maori	1,482	6	.	99	1,581	0.90
	Pacific	6	507	6	12	522	0.96
	Asian	.	6	246	18	267	1.01
	Remainder	276	33	18	12,537	12,861	1.02
	Total	*1,761*	*543*	*267*	*12,660*	.	.
75-84 yrs	Maori	777	6	.	93	870	0.89
	Pacific	.	426	6	12	441	0.90
	Asian	.	6	237	24	267	0.97
	Remainder	201	60	27	23,655	23,946	1.01
	Total	*975*	*486*	*270*	*23,784*	.	.
85+ yrs	Maori	255	.	.	36	291	0.77
	Pacific	.	171	.	18	186	0.93
	Asian	.	.	126	9	138	0.92
	Remainder	120	30	21	23,202	23,379	1.00
	Total	*375*	*201*	*150*	*23,265*	.	.

III.3.4 By Small Area Deprivation

There was no notable difference in unlock ratios by small area deprivation.

Table 19: Stratification by NZDep2001, 2001-04 NZCMS cohort. TOTAL ethnicity

Ethnicity	By Variable	Census Ethnicity	Census Deaths	Mortality Deaths	Census to Mortality Ratio
Total Ethnicity	Dep 1-4	Maori	312	303	1.03
		Non-Maori	11,970	11,979	1.00
		Pacific	84	93	0.89

Ethnicity	By Variable	Census Ethnicity	Census Deaths	Mortality Deaths	Census to Mortality Ratio
		Non-Pacific	12,201	12,189	1.00
		Asian	273	267	1.02
		Non-Asian	12,009	12,015	1.00
		NonMPA	11,781	11,709	1.01
		Maori/Pacific/Asian	501	573	0.87
	Dep 5-6	Maori	597	603	0.99
		Non-Maori	14,742	14,736	1.00
		Pacific	159	174	0.93
		Non-Pacific	15,177	15,165	1.00
		Asian	237	234	1.01
		Non-Asian	15,099	15,105	1.00
		NonMPA	14,565	14,460	1.01
		Maori/Pacific/Asian	771	879	0.88
	Dep 7-8	Maori	1,062	1,011	1.05
		Non-Maori	16,965	17,016	1.00
		Pacific	273	294	0.93
		Non-Pacific	17,754	17,730	1.00
		Asian	231	228	1.00
		Non-Asian	17,796	17,796	1.00
		NonMPA	16,794	16,659	1.01
		Maori/Pacific/Asian	1,233	1,368	0.90
	Dep 9-10	Maori	1,659	1,704	0.97
		Non-Maori	17,766	17,724	1.00
		Pacific	486	477	1.02
		Non-Pacific	18,942	18,951	1.00
		Asian	282	282	1.00
		Non-Asian	19,146	19,149	1.00
		NonMPA	17,451	17,163	1.02
		Maori/Pacific/Asian	1,974	2,265	0.87
	Dep 1-6	Maori	3,774	3,900	0.97
		Non-Maori	13,521	13,395	1.01
		Pacific	1,446	1,455	0.99
		Non-Pacific	15,846	15,840	1.00
		Asian	213	204	1.05
		Non-Asian	17,079	17,091	1.00
		NonMPA	12,480	12,042	1.04
		Maori/Pacific/Asian	4,818	5,253	0.92

Table 20: Stratification by NZDep2001, 2001-04 NZCMS cohort. PRIORITISED ethnic groups

Ethnicity	By Variable	Census Ethnicity	Census Deaths	Mortality Deaths	Census to Mortality Ratio
Prioritised Ethnicity	Dep 1-4	Maori	312	303	1.03
		Pacific	81	90	0.89

Ethnicity	By Variable	Census Ethnicity	Census Deaths	Mortality Deaths	Census to Mortality Ratio
		Asian	267	261	1.02
		NonMPA	11,622	11,628	1.00
	Dep 5-6	Maori	597	603	0.99
		Pacific	150	162	0.94
		Asian	225	225	0.99
		NonMPA	14,367	14,349	1.00
	Dep 7-8	Maori	1,062	1,011	1.05
		Pacific	267	294	0.92
		Asian	225	222	1.02
		NonMPA	16,470	16,506	1.00
	Dep 9-10	Maori	1,659	1,704	0.97
		Pacific	459	465	0.99
		Asian	261	261	1.00
		NonMPA	17,046	16,998	1.00
	Dep 1-6	Maori	3,774	3,900	0.97
		Pacific	1,416	1,428	0.99
		Asian	192	186	1.03
		NonMPA	11,916	11,778	1.01

Table 21: Stratification by NZDep2001, 2001-04 NZCMS cohort. SOLE ethnic groups

Ethnicity	By Variable	Census Ethnicity	Census Deaths	Mortality Deaths	Census to Mortality Ratio
Sole Ethnicity	Dep 1-4	Maori	192	246	0.77
		Pacific	60	72	0.85
		Asian	246	249	0.99
		Remainder	11,787	11,715	1.01
	Dep 5-6	Maori	429	513	0.83
		Pacific	117	141	0.82
		Asian	216	210	1.03
		Remainder	14,577	14,472	1.01
	Dep 7-8	Maori	780	891	0.87
		Pacific	243	261	0.92
		Asian	204	207	0.99
		Remainder	16,800	16,668	1.01
	Dep 9-10	Maori	1,284	1,560	0.82
		Pacific	417	429	0.97
		Asian	249	246	1.00
		Remainder	17,478	17,190	1.02
	Dep 1-6	Maori	3,231	3,666	0.88
		Pacific	1,362	1,371	0.99
		Asian	183	174	1.05
		Remainder	12,519	12,084	1.04

III.3.5 By RHA

Difference by RHA for 2001-04 are not as notable as those previously found in the 1980s and early 1990s. However, it is interesting to see that the total and prioritised Māori ratios are higher in the Southern RHA, but the sole Māori ratio is lowest in the Southern RHA. This suggests that the under recording of multiple ethnicities on mortality data (relative to census data) is most prominent in the South of New Zealand.

Table 22: Stratification by Regional Health Authority, 2001-04 NZCMS cohort. TOTAL ethnicity

Ethnicity	By Variable	Census Ethnicity	Census Deaths	Mortality Deaths	Census to Mortality Ratio
Total Ethnicity	Northern	Maori	2,253	2,298	0.98
		Non-Maori	21,726	21,681	1.00
		Pacific	1,716	1,758	0.98
		Non-Pacific	22,263	22,224	1.00
		Asian	684	687	0.99
		Non-Asian	23,298	23,292	1.00
		NonMPA	19,902	19,578	1.02
		Maori/Pacific/Asian	4,077	4,404	0.93
	Midland	Maori	2,835	2,913	0.97
		Non-Maori	14,628	14,550	1.01
		Pacific	174	177	0.99
		Non-Pacific	17,289	17,286	1.00
		Asian	129	111	1.17
		Non-Asian	17,334	17,352	1.00
		NonMPA	14,850	14,454	1.03
		Maori/Pacific/Asian	2,613	3,009	0.87
	Central	Maori	1,713	1,743	0.98
		Non-Maori	19,383	19,356	1.00
		Pacific	459	444	1.03
		Non-Pacific	20,640	20,652	1.00
		Asian	276	279	0.99
		Non-Asian	20,820	20,817	1.00
		NonMPA	19,080	18,891	1.01
		Maori/Pacific/Asian	2,013	2,205	0.91
	Southern	Maori	618	585	1.05
		Non-Maori	19,248	19,278	1.00
		Pacific	99	114	0.88
		Non-Pacific	19,761	19,749	1.00
		Asian	144	135	1.06
		Non-Asian	19,722	19,728	1.00
		NonMPA	19,257	19,125	1.01
		Maori/Pacific/Asian	609	738	0.83

Table 23: Stratification by Regional Health Authority, 2001-04 NZCMS cohort. PRIORITISED ethnic groups

Ethnicity	By Variable	Census Ethnicity	Census Deaths	Mortality Deaths	Census to Mortality Ratio
Prioritised Ethnicity	Northern	Maori	2,253	2,298	0.98
		Pacific	1,677	1,725	0.97
		Asian	663	654	1.02
		NonMPA	19,389	19,305	1.00
	Midland	Maori	2,835	2,913	0.97
		Pacific	162	168	0.96
		Asian	102	99	1.03
		NonMPA	14,361	14,280	1.01
	Central	Maori	1,713	1,743	0.98
		Pacific	441	432	1.02
		Asian	267	270	0.99
		NonMPA	18,675	18,654	1.00
	Southern	Maori	618	585	1.05
		Pacific	93	111	0.83
		Asian	138	135	1.04
		NonMPA	19,017	19,032	1.00

Table 24: Stratification by Regional Health Authority, 2001-04 NZCMS cohort. SOLE ethnic groups

Ethnicity	By Variable	Census Ethnicity	Census Deaths	Mortality Deaths	Census to Mortality Ratio
Sole Ethnicity	Northern	Maori	1,818	2,085	0.87
		Pacific	1,575	1,629	0.97
		Asian	636	627	1.02
		Remainder	19,950	19,641	1.02
	Midland	Maori	2,361	2,754	0.86
		Pacific	135	150	0.90
		Asian	93	90	1.02
		Remainder	14,874	14,466	1.03
	Central	Maori	1,347	1,545	0.87
		Pacific	402	399	1.01
		Asian	252	246	1.02
		Remainder	19,098	18,909	1.01
	Southern	Maori	405	513	0.79
		Pacific	81	96	0.84
		Asian	117	123	0.95
		Remainder	19,260	19,131	1.01

III.3.6 By Rurality

Rural results for Pacific and Asian have to be treated cautiously due to small numbers. That said, there do not appear to be any notable differences in ratios by rurality.

Table 25: Stratification by Rurality, 2001-04 NZCMS cohort. TOTAL ethnicity

Ethnicity	By Variable	Census Ethnicity	Census Deaths	Mortality Deaths	Census to Mortality Ratio
Total Ethnicity	Urban	Maori	4,569	4,605	0.99
		Non-Maori	60,288	60,252	1.00
		Pacific	2,355	2,409	0.98
		Non-Pacific	62,499	62,445	1.00
		Asian	1,176	1,146	1.02
		Non-Asian	63,681	63,708	1.00
		NonMPA	58,011	57,381	1.01
		Maori/Pacific/Asian	6,843	7,473	0.92
	NonUrban	Maori	2,853	2,937	0.97
		Non-Maori	14,697	14,616	1.01
		Pacific	96	84	1.13
		Non-Pacific	17,454	17,466	1.00
		Asian	60	66	0.89
		Non-Asian	17,490	17,484	1.00
		NonMPA	15,081	14,670	1.03
		Maori/Pacific/Asian	2,469	2,880	0.86

Table 26: Stratification by Rurality, 2001-04 NZCMS cohort. PRIORITISED ethnic groups

Ethnicity	By Variable	Census Ethnicity	Census Deaths	Mortality Deaths	Census to Mortality Ratio
Prioritised Ethnicity	Urban	Maori	4,569	4,605	0.99
		Pacific	2,295	2,361	0.97
		Asian	1,116	1,086	1.03
		NonMPA	56,877	56,805	1.00
	NonUrban	Maori	2,853	2,937	0.97
		Pacific	81	75	1.05
		Asian	54	69	0.80
		NonMPA	14,565	14,472	1.01

Table 27: Stratification by Rurality, 2001-04 NZCMS cohort. SOLE ethnic groups

Ethnicity	By Variable	Census Ethnicity	Census Deaths	Mortality Deaths	Census to Mortality Ratio
Sole Ethnicity	Urban	Maori	3,588	4,155	0.86
		Pacific	2,133	2,205	0.97

Ethnicity	By Variable	Census Ethnicity	Census Deaths	Mortality Deaths	Census to Mortality Ratio
		Asian	1,050	1,023	1.03
		Remainder	58,089	57,474	1.01
	NonUrban	Maori	2,343	2,739	0.86
		Pacific	63	69	0.92
		Asian	51	66	0.77
		Remainder	15,093	14,676	1.03

III.3.7 By Cause of Death

There were some differences in unlock ratios by cause of death, but probably randomly so.

Table 28: Stratification by Cause of Death, 2001-04 NZCMS cohort. TOTAL ethnicity

Ethnicity	By Variable	Census Ethnicity	Census Deaths	Mortality Deaths	Census to Mortality Ratio
Total Ethnicity	Cancer	Maori	2,133	2,127	1.00
		Non-Maori	21,117	21,123	1.00
		Pacific	636	636	1.00
		Non-Pacific	22,617	22,614	1.00
		Asian	345	351	0.98
		Non-Asian	22,908	22,899	1.00
		NonMPA	20,625	20,373	1.01
		Maori/Pacific/Asian	2,625	2,877	0.91
	CVD	Maori	2,502	2,577	0.97
		Non-Maori	30,969	30,894	1.00
		Pacific	885	912	0.97
		Non-Pacific	32,589	32,559	1.00
		Asian	438	450	0.97
		Non-Asian	33,033	33,024	1.00
		NonMPA	30,186	29,811	1.01
		Maori/Pacific/Asian	3,288	3,660	0.90
	Respiratory	Maori	570	564	1.01
		Non-Maori	5,235	5,241	1.00
		Pacific	153	159	0.97
		Non-Pacific	5,649	5,646	1.00
		Asian	45	42	1.09
		Non-Asian	5,757	5,760	1.00
		NonMPA	5,160	5,097	1.01

Ethnicity	By Variable	Census Ethnicity	Census Deaths	Mortality Deaths	Census to Mortality Ratio
		Maori/Pacific/Asian	645	708	0.91
	External Causes	Maori	1,317	1,338	0.98
		Non-Maori	13,695	13,674	1.00
		Pacific	552	573	0.97
		Non-Pacific	14,457	14,439	1.00
		Asian	261	237	1.10
		Non-Asian	14,751	14,775	1.00
		NonMPA	13,188	13,014	1.01
		Maori/Pacific/Asian	1,824	1,995	0.91
	Other Causes	Maori	900	933	0.96
		Non-Maori	3,969	3,933	1.01
		Pacific	222	213	1.06
		Non-Pacific	4,644	4,653	1.00
		Asian	144	132	1.07
		Non-Asian	4,725	4,734	1.00
		NonMPA	3,933	3,750	1.05
		Maori/Pacific/Asian	936	1,116	0.84

Table 29: Stratification by Cause of Death, 2001-04 NZCMS cohort. PRIORITISED ethnic groups

Ethnicity	By Variable	Census Ethnicity	Census Deaths	Mortality Deaths	Census to Mortality Ratio
Prioritised Ethnicity	Cancer	Maori	2,133	2,127	1.00
		Pacific	621	633	0.98
		Asian	330	339	0.97
		NonMPA	20,166	20,157	1.00
	CVD	Maori	2,502	2,577	0.97
		Pacific	864	897	0.96
		Asian	423	432	0.98
		NonMPA	29,685	29,565	1.00
	Respiratory	Maori	570	564	1.01
		Pacific	153	156	0.97
		Asian	36	42	0.93
		NonMPA	5,043	5,043	1.00
	External Causes	Maori	1,317	1,338	0.98
		Pacific	534	564	0.95
		Asian	243	219	1.11
		NonMPA	12,915	12,888	1.00
	Other Causes	Maori	900	933	0.96
		Pacific	201	183	1.09
		Asian	138	123	1.10
		NonMPA	3,630	3,627	1.00

Table 30: Stratification by Cause of Death, 2001-04 NZCMS cohort. SOLE ethnic groups

Ethnicity	By Variable	Census Ethnicity	Census Deaths	Mortality Deaths	Census to Mortality Ratio
Sole Ethnicity	Cancer	Maori	1,722	1,953	0.88
		Pacific	576	591	0.97
		Asian	309	312	0.99
		Remainder	20,643	20,394	1.01
	CVD	Maori	2,058	2,370	0.87
		Pacific	801	846	0.95
		Asian	396	411	0.97
		Remainder	30,213	29,844	1.01
	Respiratory	Maori	465	519	0.90
		Pacific	138	153	0.90
		Asian	33	33	0.97
		Remainder	5,169	5,100	1.01
	External Causes	Maori	1,059	1,230	0.86
		Pacific	507	534	0.95
		Asian	234	213	1.09
		Remainder	13,212	13,032	1.01
	Other Causes	Maori	624	819	0.76
		Pacific	171	150	1.13
		Asian	126	114	1.11
		Remainder	3,948	3,783	1.04

III.4. Unlock Ratios for NHI Data

There is a practice by some researchers and health analysts to use the ethnicity field from the NHI file. Hence, we also provide the following unlock ratios from the census compared to the NHI file.

III.4.1 Total Population

In contrast to the mortality data, the NHI ethnicity data tends to underestimate census total and prioritised counts for Māori, Pacific and Asian, ie, census to mortality ratios ranging from 1.10 to 1.21.

Table 31: Census <u>total</u> ethnicity by NHI registration form total ethnicity, 2001-04 NZCMS cohort

Ethnicity	By Variable	Census Ethnicity	Census Deaths	NHI Deaths	Census to NHI Ratio
Total Ethnicity	All Data	Maori	7,422	6,546	1.13
		Non-Maori	74,985	75,861	0.99
		Pacific	2,451	2,190	1.12
		Non-Pacific	79,953	80,217	1.00
		Asian	1,233	1,026	1.21
		Non-Asian	81,171	81,381	1.00
		NonMPA	73,089	73,149	1.00
		Maori/Pacific/Asian	9,315	9,255	1.01

Table 32: Census <u>prioritised</u> ethnicity by NHI registration form ethnicity, 2001-04 NZCMS cohort

		NHI Prioritised Ethnicity					
		Maori	Pacific	Asian	NonMPA	Total	
By Variable	Census Prioritised Ethnicity	Deaths	Deaths	Deaths	Deaths	Deaths	Census to NHI Ratio
All Data	Maori	5,886	18	6	1,509	7,422	1.13
	Pacific	60	2,007	9	297	2,373	1.10
	Asian	.	51	909	210	1,167	1.19
	NonMPA	600	87	57	70,698	71,442	0.98
	Total	*6,546*	*2,163*	*984*	*72,714*	.	.

Table 33: Census <u>sole</u> ethnic group by NHI registration form ethnicity, 2001-04 NZCMS cohort

		NHI Sole Ethnicity					
		Maori	Pacific	Asian	Remainder	Total	
By Variable	Census Sole Ethnicity	Deaths	Deaths	Deaths	Deaths	Deaths	Census to NHI Ratio
All Data	Maori	5,025	6	.	897	5,931	0.96
	Pacific	48	1,884	6	258	2,193	1.05

		NHI Sole Ethnicity					
		Maori	Pacific	Asian	Remainder	Total	
By Variable	Census Sole Ethnicity	Deaths	Deaths	Deaths	Deaths	Deaths	Census to NHI Ratio
	Asian	.	21	876	201	1,098	1.15
	Remainder	1,083	168	72	71,856	73,182	1.00
	Total	*6,159*	*2,082*	*954*	*73,209*	.	.

III.4.2 By Sex

Table 34: Census by NHI registration form ethnic group and sex, 2001-04 NZCMS cohort, TOTAL ethnicity

Ethnicity	Sex	Census Ethnicity	Census Deaths	NHI Deaths	Census to NHI Ratio
Total Ethnicity	Males	Maori	4,092	3,567	1.15
		Non-Maori	37,062	37,587	0.99
		Pacific	1,365	1,191	1.15
		Non-Pacific	39,789	39,966	1.00
		Asian	681	534	1.28
		Non-Asian	40,470	40,623	1.00
		NonMPA	36,042	36,150	1.00
		Maori/Pacific/Asian	5,115	5,004	1.02
	Females	Maori	3,327	2,976	1.12
		Non-Maori	37,926	38,274	0.99
		Pacific	1,086	999	1.09
		Non-Pacific	40,164	40,251	1.00
		Asian	552	492	1.12
		Non-Asian	40,698	40,758	1.00
		NonMPA	37,050	36,999	1.00
		Maori/Pacific/Asian	4,203	4,251	0.99

Table 35: Census by NHI registration form ethnic group and sex, 2001-04 NZCMS cohort, PRIORITISED ethnic groups

		NHI Prioritised Ethnicity					
		Maori	Pacific	Asian	NonMPA	Total	
Sex	Census Prioritised Ethnicity	Deaths	Deaths	Deaths	Deaths	Deaths	Census to NHI Ratio
Males	Maori	3,192	9	6	888	4,092	1.15
	Pacific	36	1,095	6	183	1,314	1.12
	Asian	.	33	474	129	636	1.27
	NonMPA	339	39	21	34,710	35,109	0.98
	Total	*3,567*	*1,173*	*501*	*35,913*	.	.
Females	Maori	2,694	9	6	621	3,327	1.12
	Pacific	24	915	6	117	1,059	1.07
	Asian	.	18	435	81	534	1.11
	NonMPA	258	48	39	35,988	36,333	0.99
	Total	*2,976*	*990*	*480*	*36,804*	.	.

Table 36: Census by NHI registration form ethnic group and sex, 2001-04 NZCMS cohort, SOLE ethnic groups

		NHI Sole Ethnicity					
		Maori	Pacific	Asian	Remainder	Total	
Sex	Census Sole Ethnicity	Deaths	Deaths	Deaths	Deaths	Deaths	Census to NHI Ratio
Males	Maori	2,733	6	.	513	3,246	0.97
	Pacific	30	1,026	6	156	1,215	1.08
	Asian	.	15	459	120	594	1.22
	Remainder	597	78	27	35,403	36,102	1.00
	Total	*3,357*	*1,119*	*486*	*36,189*	.	.
Females	Maori	2,292	6	.	387	2,685	0.96
	Pacific	18	858	6	99	981	1.02
	Asian	.	9	420	81	507	1.08
	Remainder	489	90	48	36,453	37,080	1.00
	Total	*2,802*	*963*	*471*	*37,020*	.	.

III.4.3 By Age

Table 37: Census by NHI registration form ethnic group and age group, 2001-04 NZCMS cohort, TOTAL ethnicity

Ethnicity	By Variable	Census Ethnicity	Census Deaths	NHI Deaths	Census to NHI Ratio
Total Ethnicity	0-14 yrs	Maori	192	165	1.16
		Non-Maori	330	357	0.92
		Pacific	63	54	1.20
		Non-Pacific	459	468	0.98
		Asian	21	18	1.26
		Non-Asian	504	507	0.99
		NonMPA	354	324	1.09
		Maori/Pacific/Asian	168	201	0.85
	15-24 yrs	Maori	483	405	1.19
		Non-Maori	1,188	1,266	0.94
		Pacific	174	117	1.47
		Non-Pacific	1,497	1,551	0.96
		Asian	87	60	1.43
		Non-Asian	1,581	1,608	0.98
		NonMPA	1,161	1,134	1.02
		Maori/Pacific/Asian	507	534	0.95
	25-44 yrs	Maori	786	705	1.12
		Non-Maori	2,202	2,283	0.96
		Pacific	237	210	1.12
		Non-Pacific	2,748	2,775	0.99
		Asian	114	78	1.45

Ethnicity	By Variable	Census Ethnicity	Census Deaths	NHI Deaths	Census to NHI Ratio
		Non-Asian	2,877	2,910	0.99
		NonMPA	2,064	2,052	1.01
		Maori/Pacific/Asian	921	933	0.99
	45-64 yrs	Maori	2,589	2,313	1.12
		Non-Maori	9,891	10,167	0.97
		Pacific	732	663	1.10
		Non-Pacific	11,748	11,817	0.99
		Asian	282	225	1.25
		Non-Asian	12,201	12,255	1.00
		NonMPA	9,348	9,426	0.99
		Maori/Pacific/Asian	3,129	3,054	1.03
	65-74 yrs	Maori	1,863	1,677	1.11
		Non-Maori	13,368	13,554	0.99
		Pacific	555	510	1.09
		Non-Pacific	14,676	14,724	1.00
		Asian	282	255	1.11
		Non-Asian	14,949	14,979	1.00
		NonMPA	12,852	12,885	1.00
		Maori/Pacific/Asian	2,382	2,346	1.01
	75-84 yrs	Maori	1,095	957	1.15
		Non-Maori	24,423	24,567	0.99
		Pacific	480	447	1.08
		Non-Pacific	25,044	25,077	1.00
		Asian	294	243	1.21
		Non-Asian	25,227	25,281	1.00
		NonMPA	23,937	23,961	1.00
		Maori/Pacific/Asian	1,587	1,560	1.02
	85+ yrs	Maori	408	324	1.27
		Non-Maori	23,580	23,670	1.00
		Pacific	207	189	1.09
		Non-Pacific	23,784	23,805	1.00
		Asian	159	147	1.06
		Non-Asian	23,835	23,844	1.00
		NonMPA	23,373	23,367	1.00
		Maori/Pacific/Asian	618	624	1.00

Table 38: Census by NHI registration form ethnic group and age group, 2001-04 NZCMS cohort, PRIORITISED ethnic groups

		NHI Prioritised Ethnicity					
		Maori	Pacific	Asian	NonMPA	Total	
By Variable	Census Prioritised Ethnicity	Deaths	Deaths	Deaths	Deaths	Deaths	Census to NHI Ratio
0-14 yrs	Maori	153	6	6	33	192	1.16
	Pacific	6	42	.	9	51	1.04

		NHI Prioritised Ethnicity					
		Maori	Pacific	Asian	NonMPA	Total	
By Variable	Census Prioritised Ethnicity	Deaths	Deaths	Deaths	Deaths	Deaths	Census to NHI Ratio
	Asian	.	6	12	6	18	1.19
	NonMPA	12	6	.	249	264	0.89
	Total	*165*	*48*	*15*	*294*	.	.
15-24 yrs	Maori	327	6	6	150	483	1.19
	Pacific	18	99	.	36	150	1.35
	Asian	.	6	54	21	78	1.39
	NonMPA	60	6	6	891	957	0.87
	Total	*405*	*114*	*57*	*1,095*	.	.
25-44 yrs	Maori	618	6	6	165	786	1.12
	Pacific	12	195	.	18	225	1.10
	Asian	.	6	75	24	105	1.35
	NonMPA	75	6	6	1,797	1,875	0.94
	Total	*705*	*204*	*75*	*2,001*	.	.
45-64 yrs	Maori	2,124	6	.	456	2,589	1.12
	Pacific	9	618	6	84	714	1.08
	Asian	.	18	198	45	261	1.25
	NonMPA	177	15	9	8,715	8,916	0.96
	Total	*2,313*	*660*	*210*	*9,297*	.	.
65-74 yrs	Maori	1,545	6	.	318	1,863	1.11
	Pacific	9	477	6	63	552	1.09
	Asian	.	6	228	33	270	1.09
	NonMPA	123	18	15	12,387	12,546	0.98
	Total	*1,677*	*507*	*246*	*12,801*	.	.
75-84 yrs	Maori	855	6	.	240	1,095	1.15
	Pacific	6	411	6	60	474	1.07
	Asian	.	6	219	60	285	1.21
	NonMPA	99	24	12	23,526	23,664	0.99
	Total	*957*	*444*	*234*	*23,886*	.	.
85+ yrs	Maori	267	.	.	141	408	1.27
	Pacific	6	165	6	33	207	1.09
	Asian	.	6	123	24	153	1.06
	NonMPA	51	21	18	23,133	23,226	1.00
	Total	*324*	*189*	*144*	*23,337*	.	.

Table 39: Census by NHI registration form ethnic group and age group, 2001-04 NZCMS cohort, SOLE ethnic groups

		NHI Sole Ethnicity					
		Maori	Pacific	Asian	Remainder	Total	
By Variable	Census Sole Ethnicity	Deaths	Deaths	Deaths	Deaths	Deaths	Census to NHI Ratio
0-14 yrs	Maori	99	.	.	9	108	0.77
	Pacific	6	39	.	6	42	0.96
	Asian	.	.	6	6	9	1.31
	Remainder	39	6	6	312	363	1.10
	Total	*138*	*45*	*6*	*327*	.	.
15-24 yrs	Maori	228	6	.	66	294	0.80
	Pacific	12	81	.	27	120	1.14
	Asian	.	6	54	15	75	1.36
	Remainder	129	18	6	1,032	1,176	1.03

		NHI Sole Ethnicity					
		Maori	Pacific	Asian	Remainder	Total	
By Variable	Census Sole Ethnicity	Deaths	Deaths	Deaths	Deaths	Deaths	Census to NHI Ratio
	Total	*369*	*105*	*54*	*1,140*	.	.
25-44 yrs	Maori	519	.	.	84	603	0.91
	Pacific	12	183	.	18	210	1.07
	Asian	.	6	72	15	96	1.25
	Remainder	129	9	6	1,941	2,079	1.01
	Total	*657*	*195*	*75*	*2,058*	.	.
45-64 yrs	Maori	1,863	6	.	315	2,181	0.99
	Pacific	6	582	6	78	672	1.06
	Asian	.	6	192	51	252	1.22
	Remainder	324	42	12	9,000	9,378	0.99
	Total	*2,196*	*633*	*204*	*9,444*	.	.
65-74 yrs	Maori	1,371	6	.	213	1,584	0.99
	Pacific	9	456	6	54	522	1.06
	Asian	.	6	228	39	267	1.10
	Remainder	225	33	12	12,588	12,861	1.00
	Total	*1,605*	*492*	*243*	*12,894*	.	.
75-84 yrs	Maori	729	6	.	138	870	0.97
	Pacific	6	390	6	45	441	1.03
	Asian	.	6	210	51	264	1.16
	Remainder	165	36	15	23,730	23,946	1.00
	Total	*894*	*429*	*228*	*23,970*	.	.
85+ yrs	Maori	219	.	.	69	291	0.98
	Pacific	6	150	.	30	186	1.04
	Asian	.	6	114	21	138	0.97
	Remainder	72	27	30	23,253	23,376	1.00
	Total	*297*	*180*	*144*	*23,373*	.	.

III.4.4 By Small Area Deprivation

Table 40: Census by NHI registration form ethnic group and NZDep2001, 2001-04 NZCMS cohort. TOTAL ethnicity

Ethnicity	By Variable	Census Ethnicity	Census Deaths	NHI Deaths	Census to NHI Ratio
Total Ethnicity	Dep 1-4	Maori	312	234	1.33
		Non-Maori	11,970	12,048	0.99
		Pacific	84	75	1.14
		Non-Pacific	12,198	12,210	1.00
		Asian	273	225	1.21
		Non-Asian	12,009	12,057	1.00
		NonMPA	11,778	11,784	1.00
		Maori/Pacific/Asian	504	498	1.01
	Dep 5-6	Maori	594	516	1.15
		Non-Maori	14,742	14,820	0.99

Ethnicity	By Variable	Census Ethnicity	Census Deaths	NHI Deaths	Census to NHI Ratio
		Pacific	159	144	1.10
		Non-Pacific	15,177	15,195	1.00
		Asian	237	201	1.18
		Non-Asian	15,099	15,138	1.00
		NonMPA	14,565	14,553	1.00
		Maori/Pacific/Asian	774	786	0.98
	Dep 7-8	Maori	1,062	828	1.28
		Non-Maori	16,965	17,199	0.99
		Pacific	273	240	1.14
		Non-Pacific	17,754	17,784	1.00
		Asian	231	186	1.24
		Non-Asian	17,796	17,841	1.00
		NonMPA	16,794	16,851	1.00
		Maori/Pacific/Asian	1,233	1,173	1.05
	Dep 9-10	Maori	1,659	1,449	1.15
		Non-Maori	17,766	17,979	0.99
		Pacific	486	438	1.11
		Non-Pacific	18,942	18,990	1.00
		Asian	279	231	1.21
		Non-Asian	19,146	19,194	1.00
		NonMPA	17,451	17,430	1.00
		Maori/Pacific/Asian	1,974	1,998	0.99
	Dep 1-6	Maori	3,771	3,504	1.08
		Non-Maori	13,521	13,794	0.98
		Pacific	1,449	1,296	1.12
		Non-Pacific	15,849	16,002	0.99
		Asian	213	177	1.20
		Non-Asian	17,082	17,118	1.00
		NonMPA	12,477	12,507	1.00
		Maori/Pacific/Asian	4,815	4,785	1.01

Table 41: Census by NHI registration form ethnic group and NZDep2001, 2001-04 NZCMS cohort. PRIORITISED ethnic groups

Ethnicity	By Variable	Census Ethnicity	Census Deaths	NHI Deaths	Census to NHI Ratio
Prioritised Ethnicity	Dep 1-4	Maori	312	234	1.33
		Pacific	84	72	1.12
		Asian	267	225	1.19
		NonMPA	11,622	11,751	0.99
	Dep 5-6	Maori	594	516	1.15
		Pacific	150	138	1.09
		Asian	222	198	1.14
		NonMPA	14,367	14,484	0.99
	Dep 7-8	Maori	1,062	828	1.28

Ethnicity	By Variable	Census Ethnicity	Census Deaths	NHI Deaths	Census to NHI Ratio
		Pacific	267	237	1.13
		Asian	225	177	1.26
		NonMPA	16,473	16,782	0.98
	Dep 9-10	Maori	1,659	1,449	1.15
		Pacific	459	432	1.06
		Asian	261	219	1.19
		NonMPA	17,046	17,328	0.98
	Dep 1-6	Maori	3,771	3,504	1.08
		Pacific	1,413	1,281	1.10
		Asian	195	165	1.16
		NonMPA	11,916	12,345	0.97

Table 42: Census by NHI registration form ethnic group and NZDep2001, 2001-04 NZCMS cohort. SOLE ethnic groups

Ethnicity	By Variable	Census Ethnicity	Census Deaths	NHI Deaths	Census to NHI Ratio
Sole Ethnicity	Dep 1-4	Maori	192	207	0.92
		Pacific	60	69	0.86
		Asian	246	219	1.12
		Remainder	11,784	11,784	1.00
	Dep 5-6	Maori	429	459	0.93
		Pacific	117	126	0.91
		Asian	216	192	1.13
		Remainder	14,577	14,562	1.00
	Dep 7-8	Maori	780	774	1.01
		Pacific	240	222	1.09
		Asian	204	174	1.18
		Remainder	16,800	16,857	1.00
	Dep 9-10	Maori	1,284	1,362	0.94
		Pacific	417	402	1.03
		Asian	249	213	1.17
		Remainder	17,478	17,451	1.00
	Dep 1-6	Maori	3,234	3,345	0.97
		Pacific	1,362	1,263	1.08
		Asian	183	159	1.15
		Remainder	12,516	12,531	1.00

III.4.5 By RHA

Table 43: Census by NHI registration form ethnic group and Regional Health Authority, 2001-04 NZCMS cohort. TOTAL ethnicity

Ethnicity	By Variable	Census Ethnicity	Census Deaths	NHI Deaths	Census to NHI Ratio
Total Ethnicity	Northern	Maori	2,253	2,031	1.11

Ethnicity	By Variable	Census Ethnicity	Census Deaths	NHI Deaths	Census to NHI Ratio
		Non-Maori	21,726	21,951	0.99
		Pacific	1,716	1,554	1.11
		Non-Pacific	22,263	22,428	0.99
		Asian	684	597	1.14
		Non-Asian	23,295	23,382	1.00
		NonMPA	19,902	19,986	1.00
		Maori/Pacific/Asian	4,077	3,996	1.02
	Midland	Maori	2,835	2,607	1.09
		Non-Maori	14,628	14,856	0.98
		Pacific	174	138	1.29
		Non-Pacific	17,289	17,328	1.00
		Asian	129	81	1.62
		Non-Asian	17,334	17,385	1.00
		NonMPA	14,850	14,781	1.00
		Maori/Pacific/Asian	2,613	2,682	0.97
	Central	Maori	1,713	1,485	1.15
		Non-Maori	19,383	19,608	0.99
		Pacific	456	402	1.13
		Non-Pacific	20,640	20,691	1.00
		Asian	279	240	1.14
		Non-Asian	20,820	20,853	1.00
		NonMPA	19,083	19,083	1.00
		Maori/Pacific/Asian	2,016	2,016	1.00
	Southern	Maori	615	420	1.47
		Non-Maori	19,248	19,443	0.99
		Pacific	99	96	1.05
		Non-Pacific	19,761	19,770	1.00
		Asian	141	105	1.38
		Non-Asian	19,722	19,761	1.00
		NonMPA	19,257	19,302	1.00
		Maori/Pacific/Asian	606	561	1.08

Table 44: Census by NHI registration form ethnic group and Regional Health Authority, 2001-04 NZCMS cohort. PRIORITISED ethnic groups

Ethnicity	By Variable	Census Ethnicity	Census Deaths	NHI Deaths	Census to NHI Ratio
Prioritised Ethnicity	Northern	Maori	2,253	2,031	1.11
		Pacific	1,677	1,533	1.09
		Asian	663	570	1.16
		NonMPA	19,386	19,845	0.98
	Midland	Maori	2,835	2,607	1.09
		Pacific	162	132	1.22
		Asian	102	78	1.33
		NonMPA	14,361	14,646	0.98

Ethnicity	By Variable	Census Ethnicity	Census Deaths	NHI Deaths	Census to NHI Ratio
	Central	Maori	1,713	1,485	1.15
		Pacific	441	399	1.11
		Asian	267	234	1.13
		NonMPA	18,675	18,975	0.98
	Southern	Maori	615	420	1.47
		Pacific	93	96	0.97
		Asian	135	99	1.39
		NonMPA	19,017	19,248	0.99

Table 45: Census by NHI registration form ethnic group and Regional Health Authority, 2001-04 NZCMS cohort. SOLE ethnic groups

Ethnicity	By Variable	Census Ethnicity	Census Deaths	NHI Deaths	Census to NHI Ratio
Sole Ethnicity	Northern	Maori	1,818	1,902	0.96
		Pacific	1,575	1,488	1.06
		Asian	639	561	1.13
		Remainder	19,950	20,028	1.00
	Midland	Maori	2,361	2,487	0.95
		Pacific	138	123	1.10
		Asian	93	72	1.35
		Remainder	14,874	14,784	1.01
	Central	Maori	1,347	1,392	0.97
		Pacific	402	384	1.05
		Asian	249	231	1.09
		Remainder	19,098	19,092	1.00
	Southern	Maori	405	378	1.07
		Pacific	81	87	0.95
		Asian	117	93	1.27
		Remainder	19,260	19,305	1.00

III.4.6 By Rurality

Table 46: Census by NHI registration form ethnic group and Rurality, 2001-04 NZCMS cohort. TOTAL ethnicity

Ethnicity	By Variable	Census Ethnicity	Census Deaths	NHI Deaths	Census to NHI Ratio
Total Ethnicity	Urban	Maori	4,569	4,008	1.14
		Non-Maori	60,288	60,846	0.99
		Pacific	2,355	2,127	1.11
		Non-Pacific	62,502	62,730	1.00
		Asian	1,173	993	1.18
		Non-Asian	63,681	63,864	1.00
		NonMPA	58,008	58,098	1.00
		Maori/Pacific/Asian	6,846	6,756	1.01

Ethnicity	By Variable	Census Ethnicity	Census Deaths	NHI Deaths	Census to NHI Ratio
	NonUrban	Maori	2,850	2,535	1.12
		Non-Maori	14,697	15,015	0.98
		Pacific	96	66	1.49
		Non-Pacific	17,457	17,487	1.00
		Asian	60	33	1.88
		Non-Asian	17,487	17,517	1.00
		NonMPA	15,078	15,051	1.00
		Maori/Pacific/Asian	2,469	2,499	0.99

Table 47: Census by NHI registration form ethnic group and Rurality, 2001-04 NZCMS cohort. PRIORITISED ethnic groups

Ethnicity	By Variable	Census Ethnicity	Census Deaths	NHI Deaths	Census to NHI Ratio
Prioritised Ethnicity	Urban	Maori	4,569	4,008	1.14
		Pacific	2,295	2,103	1.09
		Asian	1,116	951	1.17
		NonMPA	56,877	57,789	0.98
	NonUrban	Maori	2,850	2,535	1.12
		Pacific	78	57	1.34
		Asian	54	33	1.68
		NonMPA	14,565	14,925	0.98

Table 48: Census by NHI registration form ethnic group and Rurality, 2001-04 NZCMS cohort. SOLE ethnic groups

Ethnicity	By Variable	Census Ethnicity	Census Deaths	NHI Deaths	Census to NHI Ratio
Sole Ethnicity	Urban	Maori	3,588	3,750	0.96
		Pacific	2,133	2,028	1.05
		Asian	1,050	921	1.14
		Remainder	58,086	58,155	1.00
	NonUrban	Maori	2,343	2,409	0.97
		Pacific	63	54	1.17
		Asian	48	33	1.55
		Remainder	15,093	15,054	1.00

III.4.7 By Cause of Death

Table 49: Census by NHI registration form ethnic group and Cause of Death, 2001-04 NZCMS cohort. TOTAL ethnicity

Ethnicity	By Variable	Census Ethnicity	Census Deaths	NHI Deaths	Census to NHI Ratio
Total Ethnicity	Cancer	Maori	2,133	1,875	1.14
		Non-Maori	21,117	21,375	0.99

Ethnicity	By Variable	Census Ethnicity	Census Deaths	NHI Deaths	Census to NHI Ratio
		Pacific	633	594	1.07
		Non-Pacific	22,617	22,659	1.00
		Asian	345	303	1.13
		Non-Asian	22,905	22,947	1.00
		NonMPA	20,625	20,628	1.00
		Maori/Pacific/Asian	2,628	2,625	1.00
	CVD	Maori	2,502	2,175	1.15
		Non-Maori	30,969	31,296	0.99
		Pacific	885	780	1.14
		Non-Pacific	32,586	32,691	1.00
		Asian	441	366	1.19
		Non-Asian	33,033	33,105	1.00
		NonMPA	30,186	30,273	1.00
		Maori/Pacific/Asian	3,288	3,201	1.03
	Respiratory	Maori	570	504	1.13
		Non-Maori	5,235	5,301	0.99
		Pacific	153	141	1.10
		Non-Pacific	5,652	5,667	1.00
		Asian	48	39	1.22
		Non-Asian	5,760	5,766	1.00
		NonMPA	5,160	5,163	1.00
		Maori/Pacific/Asian	645	639	1.01
	External Causes	Maori	1,314	1,233	1.07
		Non-Maori	13,695	13,779	0.99
		Pacific	555	516	1.07
		Non-Pacific	14,457	14,496	1.00
		Asian	261	213	1.22
		Non-Asian	14,751	14,799	1.00
		NonMPA	13,188	13,167	1.00
		Maori/Pacific/Asian	1,824	1,842	0.99
	Other Causes	Maori	900	756	1.19
		Non-Maori	3,966	4,110	0.97
		Pacific	222	162	1.39
		Non-Pacific	4,641	4,707	0.99
		Asian	144	99	1.43
		Non-Asian	4,725	4,767	0.99
		NonMPA	3,933	3,918	1.00
		Maori/Pacific/Asian	933	951	0.98

Table 50: Census by NHI registration form ethnic group and Cause of Death, 2001-04 NZCMS cohort. PRIORITISED ethnic group

Ethnicity	By Variable	Census Ethnicity	Census Deaths	NHI Deaths	Census to NHI Ratio
Prioritised Ethnicity	Cancer	Maori	2,133	1,875	1.14
		Pacific	621	591	1.05
		Asian	330	291	1.12
		NonMPA	20,169	20,493	0.98
	CVD	Maori	2,502	2,175	1.15
		Pacific	864	774	1.12
		Asian	420	357	1.18
		NonMPA	29,685	30,168	0.98
	Respiratory	Maori	570	504	1.13
		Pacific	153	138	1.11
		Asian	39	33	1.12
		NonMPA	5,043	5,127	0.98
	External Causes	Maori	1,314	1,233	1.07
		Pacific	537	510	1.05
		Asian	246	201	1.21
		NonMPA	12,915	13,068	0.99
	Other Causes	Maori	900	756	1.19
		Pacific	201	153	1.30
		Asian	138	96	1.41
		NonMPA	3,633	3,861	0.94

Table 51: Census by NHI registration form ethnic group and Cause of Death, 2001-04 NZCMS cohort. SOLE ethnic group

Ethnicity	By Variable	Census Ethnicity	Census Deaths	NHI Deaths	Census to NHI Ratio
Sole Ethnicity	Cancer	Maori	1,725	1,761	0.98
		Pacific	576	564	1.02
		Asian	312	282	1.09
		Remainder	20,643	20,643	1.00
	CVD	Maori	2,058	2,088	0.99
		Pacific	804	750	1.07
		Asian	399	351	1.14
		Remainder	30,213	30,285	1.00
	Respiratory	Maori	468	474	0.99
		Pacific	138	129	1.06
		Asian	33	30	1.04
		Remainder	5,166	5,169	1.00
	External Causes	Maori	1,059	1,137	0.93
		Pacific	510	492	1.03
		Asian	234	198	1.18
		Remainder	13,209	13,185	1.00
	Other Causes	Maori	621	702	0.89
		Pacific	171	144	1.17

Ethnicity	By Variable	Census Ethnicity	Census Deaths	NHI Deaths	Census to NHI Ratio
		Asian	126	93	1.35
		Remainder	3,945	3,927	1.01

III.5. Conclusions

There was little difference in recoding ethnicity (Total and Prioritised definitions) between census and mortality data during 2001-04. This is good news. It also suggests that the collection of ethnicity data on health data in a manner as close to that on census data works for getting accurate health statistics.

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Part IV Appendices

IV.1. Variables included in the cohort file

Those variables included in the cohort file are presented in the following table.

Table 52 lists the name of each variable, variable format and the variable label, and brief explanatory notes where applicable.

For a few variables an extended explanation is provided, where required, in the pages following the table.

A detailed list of variable formats (as used in SAS) is included in the Table 53. These provide labels for the possible values of each variable.

Table 52: Description of main Variables in the Cohort datasets 1981, 1986, 1991, 1996 and 2001

Variable Name	Format 1981	Format 1986	Format 1991	Format 1996	Format 2001	Variable Label
AbsentFlg	fabs.	fabs.	fabs.	fabs.	fabs.	Absentee Indicator
AgeC_5yr	f5AgG.	f5AgG.	f5AgG.	f5AgG.	-	Age at Census (5 year age groups)
AgeC_Gp	fAgeC.	fAgeC.	fAgeC.	fAgeC.	-	Age at Census (5 Std Groups)
AgeC_mths	f5AgM.	f5AgM.	f5AgM.	f5AgM.	[f5AgMO.]	Age at Census (months)
AgeC_yrs	f5AgY.	f5AgY.	f5AgY.	f5AgY.	[f5AgY.]	Age at Census (years)
AgeD_mths	f5AgM.	f5AgM.	f5AgM.	f5AgM.	[f5AgMO.]	Age at Death (months)
AU1Yr	fYesNo.	-	-	-	-	Same Area Unit of Residence 1 Year Ago
AU5Yr	-	-	-	fAU5yr.	fAU5yr.	Area Unit 5 years ago indicator
AmenMort	-	-	-	-	fAmen.	Amenable Mortality Flag
AnyAV	fAnyAv.	fAnyAv.	fAnyAv.	fAnyAv.	fAnyAv.	Avoidable Mortality Flag (First Version) *[1981, 1986, 1991, 1996]*; Avoidable Mortality Flag *[2001]*
BabyBrn	-	-	-	fBBrn.	-	Number of Live Babies Given Birth To
BirthGp	fBthGp.	fBthGp.	fBthGp.	fBthGp.	fBthGp.	Country of Birth
CauseDeath	f4dth.	f4dth.	f4dth.	f4dth.	-	Cause of Death (4 groups)
CenYear	[fcyear.]	[fcyear.]	[fcyear.]	[fcyear.]	fcyear.	Year of Census *[1981, 1986, 1991, 1996]*; Census Year *[2001]*
ChildDep	-	-	-	FChdDep.	FChdDep.	Child Dependency Status Indicator

Variable Name	Format 1981	Format 1986	Format 1991	Format 1996	Format 2001	Variable Label
DisCode	-	-	-	fDisCd.	-	Long-Term Disability or Handicap
DisInd	-	-	-	fDisIn.	-	Disability Indicator (from HealthProb & DisCode)
D_PTotInc	[6.0]	[6.0]	[6.0]	[6.0]	[6.0]	Total Personal Income for H/H
D_TotAdult	[3.0]	[3.0]	[3.0]	[3.0]	[3.0]	Total Adults (>=18) in Dwelling
D_TotAdultAbs	[3.0]	[3.0]	[3.0]	[3.0]	[3.0]	Total Adults Absent in Dwelling
D_TotChild	[3.0]	[3.0]	[3.0]	[3.0]	[3.0]	Total Children (<18) in Dwelling
D_TotChildAbs	[3.0]	[3.0]	[3.0]	[3.0]	[3.0]	Total Children Absent in Dwelling
D_TotDwell	[3.0]	[3.0]	[3.0]	[3.0]	[3.0]	Total in Dwelling
EdLAllCur	fAtLev.	-	-	-	-	Current Education Attendance Level
EdLAllHgh	fEdAtt.	-	-	-	-	Highest Level of Education Attendance
EdLAllPst	fAtLev.	-	-	-	-	Past Education Attendance Level
EdLSchHgh	fscat.	-	-	-	-	School Attendance Level
EdQAll_A	f81qual.	-	-	-	-	First Grouped Qualification Gained
EdQAll_B	f81qual.	-	-	-	-	Second Grouped Qualification Gained
EdQAll_C	f81qual.	-	-	-	-	Third Grouped Qualification Gained
EdQAll_D	f81qual.	-	-	-	-	Fourth Grouped Qualification Gained
EdQAllHgh	f81HQal.	f86HQal.	f91HQ.	f96HQal.	f01HQal.	Highest Qualification Obtained *[1981, 1991]*; Highest Qualification Gained (SNZ Protocol) *[1986]*; Derived Highest Qualification Obtained *[1996,2001]*

Variable Name	Format 1981	Format 1986	Format 1991	Format 1996	Format 2001	Variable Label
EdQAllHghDet	-	-	-	f96HQ.	-	Highest Qualification Obtained
EdQSchHgh	f81sql.	f86sql.	f91sql.	f96sql.	f01sql.	Highest School Qualification
EdQTer_A	-	-	f91TQa.	f96Ter.	f01Ter.	Tertiary Qual Gained, Group A *[1991]*; Tertiary Qual 1 Attainment Level *[1996, 2001]*
EdQTer_B	-	-	f91TQb.	f96Ter.	-	Tertiary Qual Gained, Group B *[1991]*; Tertiary Qual 2 Attainment Level *[1996]*
EdQTer_C	-	-	f91TQc.	-	-	Tertiary Qual Gained, Group C
EdQTer_D	-	-	f91TQd.	-	-	Tertiary Qual Gained, Group D
EdQTer_E	-	-	f91TQe.	-	-	Tertiary Qual Gained, Group E
EdQTerHgh	f81TQ.	f86tql.	-	-	-	Tertiary Qualification Gained
EmpSt	f81Emp.	f86Emp.	-	f96Emp.	f01Emp.	Employment Status
EqIncCPIJen	fcpiJg.	fcpiJg.	fcpiJg.	fcpiJg.	[fcpiJg.]	Equiv H/H Inc CPI adj.(base 1996) (Jensen) *[1981, 1986, 1991, 1996]*; Equivalised H/H Income CPI adj.(base 1996) (Jensen) *[2001]*
EqIncCPILIS	fcpiLg.	fcpiLg.	fcpiLg.	fcpiLg.	[fcpiLg.]	Equiv H/H Inc CPI adj.(base 1996) (Luxembourg) *[1981, 1986, 1991, 1996]*; Equivalised H/H Income CPI adj.(base 1996) (Luxembourg) *[2001]*
EthAsian	-	-	-	-	feeth.	Ethnicity -Any Asian

Variable Name	Format 1981	Format 1986	Format 1991	Format 1996	Format 2001	Variable Label
EthCenDet	f81EthD.	-	f91EthD.	-	-	Ethnicity -Detailed
EthCenDet1	-	-	-	f01eth.	f01eth.	Ethnicity Detailed -1 *[1996]*; Ethnicity -1 *[2001]*
EthCenDet2	-	-	-	f01eth.	f01eth.	Ethnicity Detailed -2 *[1996]*; Ethnicity -1 *[2001]*
EthCenDet3	-	-	-	f01eth.	f01eth.	Ethnicity Detailed -3 *[1996]*; Ethnicity -1 *[2001]*
EthCenDet4	-	-	-	-	f01eth.	Ethnicity -4
EthCenDet5	-	-	-	-	f01eth.	Ethnicity -5
EthCenDet6	-	-	-	-	f01eth.	Ethnicity -6
EthCenGp6_A	-	fdeth.	fdeth.	fdeth.	-	Ethnicity -A
EthCenGp6_B	-	fdeth.	fdeth.	fdeth.	-	Ethnicity -B
EthCenGp6_C	-	fdeth.	fdeth.	fdeth.	-	Ethnicity -C
EthCenPr3	f4eth.	f4eth.	f4eth.	f4eth.	f4eth.	Ethnicity -Prioritised *[1981, 1986, 1991, 1996]*; Ethnicity -Prioritised (no missings) *[2001]*
EthCenPr4	f4eth.	f4eth.	f4eth.	f4eth.	-	Ethnicity -Prioritised
EthCenPr5	-	-	fnhiraw.	-	-	Ethnicity -Prioritised*
EthCenSol3	f4eth.	f4eth.	f4eth.	f4eth.	-	Ethnicity -Sole *[1981, 1986,1996]*; Ethnicity -Sole* *[1991]*
EthCenSol4	f4eth.	f4eth.	f4eth.	f4eth.	-	Ethnicity -Sole
EthCenSol5	-	-	fnhiraw.	-	-	Ethnicity -Sole*
EthEuro	-	-	-	-	feeth.	Ethnicity - Any NonMPA
EthMaori	-	-	-	-	feeth.	Ethnicity - Any Maori

Variable Name	Format 1981	Format 1986	Format 1991	Format 1996	Format 2001	Variable Label
EthPacific	f4eth.	f4eth.	f4eth.	f4eth.	feeth.	Ethnicity - Any Pacific
FamCode	fFamC.	fFamC.	-	-	-	Family Code
FamType	-	-	f91FamT.	f96FamT.	f01FamT.	Family Type
G_AHB	f89AHB.	f89AHB.	f89AHB.	f89AHB.	f89AHB.	Area Health Board 1989
G_AHBD91	-	-	f91AHD.	-	-	Usual Residence Area Health Board Consituent District
G_AHD	f93AHD.	f93AHD.	f91AHD.	f93AHD.	f93AHD.	Area Health District 1993
G_DHB	-	-	-	-	f01DHB.	District Health Board
G_RC	-	-	-	-	fRegCo.	Regional Council
G_RHA	frha.	frha.	frha.	frha.	frha.	Regional Health Authority (1989 AHB)
G_Rurality	frural.	frural.	frural.	frural.	f6rur.	Rurality Indicator
G_TLA5yr	-	-	-	f95tla.	f95tla.	TLA 1995 Address 5 Years Ago
G_TLA89	-	-	f95tla.	-	-	Territorial Local Authority 1989
G_TLA95	f95tla.	f95tla.	-	f95tla.	f95tla.	Territorial Local Authority 1995
G_UA91	-	-	f91UA.	-	-	Usual Residence Urban Area 1991
G_UA96	f96UA.	f96UA.	-	f96UA.	[8.0]	Usual Residence Urban Area 1996 *[1981, 1986, 1996]*; Usual Residence Urban Area 1996 (Randomised id) *[2001]*
G_URProfile	-	-	-	-	FUrPro.	Usual Residence Profile
H_BCars	f8num.	-	-	-	-	Number of Business Cars in H/H
H_Bdrms	f20num.	f8num.	f8num.	f14num.	f14num.	Number of Bedrooms

Variable Name	Format 1981	Format 1986	Format 1991	Format 1996	Format 2001	Variable Label
H_DwgTp	f81dtyp.	-	-	f96dtyp.	f96dtyp.	Dwelling Type (detailed) *[1981]*; Dwelling Record Type *[1996, 2001]*
H_DwgTpG	-	fdtyp.	fdtyp.	fdtyp.	f01dtpe.	Dwelling Type *[1986, 1991, 1996]*; Dwelling Type (Detailed) *[2001]*
H_FtJob	-	f7num.	-	-	-	Number of Full-time Jobs in H/H
H_IncAC	-	-	-	fIncS.	fIncS.	H/H Inc. Srce -ACC Regular Payments
H_IncDP	-	-	-	fIncS.	fIncS.	H/H Inc. Srce -Domestic Purposes Benefit
H_IncGB	-	-	-	fIncS.	fIncS.	H/H Inc. Srce -Other Government Benefits
H_IncIB	-	-	-	fIncS.	fIncS.	H/H Inc. Srce -Invalids Benefit
H_IncNum	-	-	-	-	f6num.	Number Diff Sources Support Service Income for H/H excl ACC&Super
H_IncSB	-	-	-	fIncS.	fIncS.	H/H Inc. Srce -Sickness Benefit
H_IncSE	-	-	-	fIncS.	fIncS.	H/H Inc. Srce -Self-employment
H_IncUB	-	-	-	fIncS.	fIncS.	H/H Inc. Srce -Unemployment Benefit
H_IncWS	-	-	-	fIncS.	fIncS.	H/H Inc. Srce -Wages/Salary etc.
H_Mveh	f8num.	f5num.	f5num.	f3num.	f3num.	Number of Private Cars in H/H [1981, 1986]; Number of Motor Vehicles in H/H *[1991, 1996, 2001]*
H_NAbCh	f9num.	-	-	-	-	Number of Children Absent in H/H
H_NAbTot	f9num.	-	-	f5num.	-	Total Number of Absentees in H/H

Variable Name	Format 1981	Format 1986	Format 1991	Format 1996	Format 2001	Variable Label
H_NAdult	f8num.	f8num.	-	-	-	Number of Adults aged 20+ in H/H (on C/N) *[1981]*; Number of Adults aged 16+ in H/H (on C/N) *[1986]*
H_NChn	f8num.	f8num.	-	-	fdepch.	Number of Children aged 0-15 in H/H (on C/N) *[1981, 1986]*; Number of Children aged 0-15 in H/H *[2001]*
H_NOccy	f81Occ.	f81Occ.	f91Occ.	f96Occ.	f01Lld.	Nature of Occupancy *[1981, 1986, 1991, 1996]*; Nature of Occupancy [Sector of Landlord] *[2001]*
H_OccTot	-	-	-	f500nm.	-	Total Number of Occupants in H/H
H_PBike	f8num.	-	-	-	-	Number of Pushbikes in H/H
H_PerFam	-	-	-	f20num.	f01PerF.	Number of People in Family
H_PtJob	-	f7gnum.	-	-	-	Number of Part-time Jobs in H/H
H_Teleph	-	-	-	fTele.	f01Tele.	Telephone in Dwelling
H_Tenure	-	-	-	f96Tenr.	f96Tenr.	Tenure
H_THInc	f81Inc.	f86Inc.	f91Inc.	f96Inc.	f96Inc.	Total Household Income
H_Type	f81HHT.	-	-	-	-	Household Type
H_UsHHC	f81UHC.	fhhc.	-	fhhc.	f01hhc.	Usual Household Composition
HealthProb	-	-	-	fHProb.	-	Health Problems
HealthProb_A	-	-	-	fHProbD.	-	Health Problem 1
HealthProb_B	-	-	-	fHProbD.	-	Health Problem 2
HealthProb_C	-	-	-	fHProbD.	-	Health Problem 3

Variable Name	Format 1981	Format 1986	Format 1991	Format 1996	Format 2001	Variable Label
HrsWk	f81hwk.	-	-	-	f01hwk.	Total Hours Worked (per week) *[1981]*; Total Number of Hours Worked *[2001]*
HrsWkG	-	-	-	fhwk.	-	Total Number of Hours Worked
I_DPB	fiDPB.	fiDPB.	-	-	-	Domestic Purposes Benefit
I_FamBen	fiFB.	fiFB.	-	-	-	Family Benefit
I_FamCare	-	fiFC.	-	-	-	Family Care Benefit
I_IncSup	fiIS.	fiIS.	-	-	-	Income Support Payments Indicator
I_InvalBen	fiIB.	-	-	-	-	Invalids Benefit Indicator
I_ISP_Der	-	-	fi91ISP.	-	-	Income Support Payments -Derived
I_ISPA	-	-	fi91IG.	-	-	Income Support Payment Group A
I_ISPB	-	-	fi91IG.	-	-	Income Support Payment Group B
I_ISPC	-	-	fi91IG.	-	-	Income Support Payment Group C
I_ISPD	-	-	fi91IG.	-	-	Income Support Payment Group D
I_ISPE	-	-	fi91IG.	-	-	Income Support Payment Group E
I_OispG	-	-	fi91IO.	-	-	Other Income Support Payments -Grouped
I_PIS_AC	-	-	-	fIncS.	fIncS.	Personal Inc. Srce -ACC Regular Payments
I_PIS_DP	-	-	-	fIncS.	fIncS.	Personal Inc. Srce -Domestic Purposes Benefit
I_PIS_GB	-	-	-	fIncS.	fIncS.	Personal Inc. Srce -Other Government Benefits
I_PIS_IB	-	-	-	fIncS.	fIncS.	Personal Inc. Srce -Invalids Benefit

Variable Name	Format 1981	Format 1986	Format 1991	Format 1996	Format 2001	Variable Label
I_PIS_SB	-	-	-	fIncS.	fIncS.	Personal Inc. Srce -Sickness Benefit
I_PIS_SE	-	-	-	fIncS.	fIncS.	Personal Inc. Srce -Self-employment
I_PIS_UB	-	-	-	fIncS.	fIncS.	Personal Inc. Srce -Unemployment Benefit
I_PIS_WS	-	-	-	fIncS.	fIncS.	Personal Inc. Srce -Wages/Salary etc.
I_SickBen	fiSick.	fiSick.	-	-	-	Sickness Benefit
I_TInc	f81Inc.	f86Inc.	f91Inc.	f96Inc.	f96Inc.	Total Personal Income
I_UnEmpBen	fiUB.	fiUB.	-	-	-	Unemployment Benefit
ICDCan	$fxicd.	$fxicd.	$fxicd.	$fxicd.	-	ICD Cancer Details
ICD_Dt	-	-	-	-	$ficddt.	ICD Cause of Death Further Details *[2001]*
ICD_Gp	$ficd.	$ficd.	$ficd.	$ficd.	$ficddt.	International Cause of Death (ICD) *[1981, 1986, 1991, 1996]*; Underlying Cause of Death *[2001]*
ID_Cohort	[Cnnnnnnn]	[Cnnnnnnn]	[Cnnnnnnn]	[Cnnnnnnn]	[Cnnnnnnn]	Unique Cohort Id
ID_Dwell	[Dnnnnnnn]	[Dnnnnnnn]	[Dnnnnnnn]	[Dnnnnnnn]	[nnnnnnn]	Unique Dwelling Id
Imp	-	-	f91IImp.	-	-	Imputation Indicator
ImpAge	-	-	f91IAge.	f96IAge.	-	Age Imputation Indicator
ImpForm	-	-	-	f96IDum.	f01IDum.	Form Imputated Indicator (Dummy Form)
ImpLFS	-	-	-	f96ILFS.	-	Imputation in Labour Force Status
ImpMonth	fIMth.	fIMth.	fIMth.	fIMth.	fImpMth.	Age in Months Imputation Indicator *[1981, 1986, 1991, 1996]*; Month of Birth imputed *[2001]*

Variable Name	Format 1981	Format 1986	Format 1991	Format 1996	Format 2001	Variable Label
ImpRes	-	-	-	f96IRes.	-	Imputation in Usual Residence Status
ImpSex	-	-	-	f96ISex.	-	Imputation in Sex
IndAnz1	-	-	-	$fANZ.	$fANZ.	ANZSIC Industry (1 xter)
Industry	f1Ind.	f2Ind.	f1Ind.	f1Ind.	-	Industry 1 Digit Code *[1981, 1991, 1996]*; Industry 2 Digit Code *[1986]*
Jobless	-	-	-	fJob.	-	Joblessness
LabSt	f96LFS.	f86LFS.	f91LFS.	f96LFS.	f96LFS.	Labour Force Status
LangInd	-	-	-	f96Lang.	f01Lang.	Official Language Indicator
Link	flink.	flink.	flink.	flink.	flink.	Matched
MaoriAnc	-	-	f91Maor.	f96Maor.	-	Maori Ancestry Indicator
MaoriDes	f81Maor.	f86Maor.	-	-	f01Maor.	Maori Descent Indicator
MarSt	f81Marr.	f86Marr.	f86Marr.	-	-	Marital Status
MarSt_L	-	-	-	f96MarL.	f96MarL.	Marital Status (Legal)
MarSt_S	-	-	-	f96MarS.	f01MarS.	Marital Status (Social)
MissedObs	[1.0]	-	-	-	-	Accidentially missed obs. 1=Missed, 0=On both
NZDep2001	-	-	-	-	fdeps.	NZ Deprivation 2001 scale
NZDep91	-	-	fdeps.	-	-	NZ Deprivation 1991 scale
NZDep91sc	-	-	ftdep.	-	-	NZ Deprivation 1991 score (rounded)
NZDep96	fdeps.	fdeps.	-	fdeps.	-	NZ Deprivation 1996 scale

Variable Name	Format 1981	Format 1986	Format 1991	Format 1996	Format 2001	Variable Label
NZDep96sc	ftdep.	ftdep.	-	ftdep.	-	NZ Deprivation 1996 score (rounded)
NZDepFour	fdep4g.	fdep4g.	fdep4g.	fdep4g.	-	NZ Deprivation 1996 scale (4 groups) *[1981, 1986, 1996]*; NZ Deprivation 1991 scale (4 groups) *[1991]*
O_EGP	fEGP.	fEGP.	fEGP.	fEGP.	fEGP.	EGP *[1981, 1986, 1991, 1996]*; EGP 68 from NZSCO68 (but using NZSCO99) *[2001]*
O_EGPSp	-	fEGP.	-	-	-	EGP (Spouse)
O_ElleyIrv	fEI.	fEI.	fEI.	fEI.	fEI.	Elley-Irving Index *[1981, 1986, 1991, 1996]*; Elley-Irving 68 from NZSCO68 (but using NZSCO99) *[2001]*
O_ElleyIrvSp	-	fEI.	-	-	-	Elley-Irving Index (Spouse)
O_FarmFlg	fFarmF.	fFarmF.	fFarmF.	fFarmF.	fFarmF.	Farmers Occupation Flag *[1981, 1986, 1991, 1996]*; Farmer's Occupational Flag from NZSCO68 (but using NZSCO99) *[2001]*
O_FarmFlgFa	-	-	fFarmF.	-	-	Farmers Occupation Flag (Father)
O_FarmFlgMo	-	-	fFarmF.	-	-	Farmers Occupation Flag (Mother)
O_FarmFlgPr	-	-	fFarmF.	-	-	Farmers Occupation Flag (Parent)
O_FarmFlgSp	-	fFarmF.	-	-	-	Farmers Occupation Flag (Spouse)
O_Occ2X	[f2xOcc.]	[f2xOcc.]	[f2xOcc.]	[f2xOcc.]	f01Occ.	Occupation Code - 2 Digits Occ68 *[1981, 1986, 1991, 1996]*; Occupational Code - 2 Digits NZSCO99 V 1.0 *[2001]*
O_OccSp2X	-	[f2xOcc.]	-	-	-	Spouse Occupation Code - 2 Digits Occ68

Variable Name	Format 1981	Format 1986	Format 1991	Format 1996	Format 2001	Variable Label
O_SEI91c	-	-	-	-	fnsei.	NZSEI 1991 class from NZSCO90 (but using NZSCO99)
O_SEI91v	-	-	[f91sei.]	[f91sei.]	f91sei.	SEI 91 Values *[1981, 1986, 1991, 1996]*; NZSEI 1991 value from NZSCO90 (but using NZSCO99) *[2001]*
O_SEI91vFa	-	-	[f91sei.]	-	-	SEI 91 Values (Father)
O_SEI91vMo	-	-	[f91sei.]	-	-	SEI 91 Values (Mother)
O_SEI91vPr	-	-	[f91sei.]	-	-	SEI 91 Values (Parent)
O_SEI96c	-	-	-	-	fnsei.	NZSEI 1996 class from NZSCO95 (but using NZSCO99)
O_SEI96v	-	-	-	[f96sei.]	f96sei.	SEI 96 Values *[1996]*; NZSEI 1996 value from NZSCO95 (but using NZSCO99) *[2001]*
PerType	fPRecT.	fPRecT.	fPRecT.	fPRecT.	fPRecT.	Personal Record Type
PostAUIn	-	-	fPostC.	fPostC.	-	Post Census Hospitalisation Indicator
PreAUIn	-	-	fPreC.	fPreC.	-	Pre Census Hospitalisation Indicator
PrEth4	-	-	-	-	f4eth.	Prioritised Ethnicity
Religion	f81relg.	f81relg.	-	f81relg.	f01relg.	Religion - Main Groups *[1981]*; Religion - Treat Groups With Caution *[1986,1996]*; Religion - Main Groups (Level 1) *[2001]*
SeasDth	fseason.	fseason.	fseason.	fseason.	fseason.	Season at Death

Variable Name	Format 1981	Format 1986	Format 1991	Format 1996	Format 2001	Variable Label
Sex	fvsex.	fvsex.	fvsex.	fvsex.	fvsex.	Sex
SexOc	fvsex.	fvsex.	-	-	-	Sex of Head of H/H *[1981]*; Sex of Occupier of H/H *[1986]*
SexPr	-	-	fvsex.	-	-	Sex of Parent
SmkCur	fSmkC.	-	-	-	-	Current Smoking Status
SmkEver	-	-	-	fSmkE.	-	Ever Smoked
SmkQnt	fSmkQ.	-	-	-	-	Quantity of Cigarettes Smoked in a day (23/3/81)
SmkReg	-	-	-	fSmkR.	-	Smoking Regularly
SmkStat	-	-	-	fSmkS.	-	Smoking Status
SocCap01	-	-	-	f01Soc.	-	Social Capital Index (0.1 steps)
SocCap40	-	-	-	f40Soc.	-	Social Capital Index (40 groups)
SocFrag01	-	-	-	-	fdec.	2001 full socfrag decile
TotAsian	-	-	-	-	fTotEth.	Total Asian
TotMaori	-	-	-	-	fTotEth.	Total Maori
TotPacific	-	-	-	-	fTotEth.	Total Pacific
UResid_PrivD	[1.0]	[1.0]	[1.0]	[1.0]	[1.0]	Usual Residence, Private Dwelling
UsInd	f81USI.	fUSI.	fUSI.	fUSI.	f01USI.	Usual Residence Indicator
UsInd91	fUSI.	-	-	-	-	Usual Residence Indicator 1991
W_AgDepAdj	[8.6]	[8.6]	[8.6]	[8.6]	-	Deprivation Scaled Weight

Variable Name	Format 1981	Format 1986	Format 1991	Format 1996	Format 2001	Variable Label
W_AgEthAdj	[8.6]	[8.6]	[8.6]	[8.6]	[8.6]	Ethnicity Scaled Weight
W_AgICDAdj	[8.6]	[8.6]	[8.6]	[8.6]	-	Cause of Death Scaled Weight
W_Base	[8.6]	[8.6]	[8.6]	[8.6]	[8.6]	Base Linkage Weight
WgtStrata	[$21]	[$21]	[$21]	[$21]	[$21]	Weight Stratum
WrkatHome	-	-	-	-	f01WkHm.	Work at Home Indicator
YrsInNZ	-	-	-	fYrsNZ.	fYrsNZ.	Years since Arrival in NZ
YrsUR	-	f86YUR.	f91YUR.	f96YUR.	fYrsUR.	Years at Usual Residence

Table 53: SAS formats for variables included in cohort file

RECORD TYPE FORMATS		
VAR: AbsentFlg	Absentee Indicator	1981,1986,1991,1996,2001

Format: fabs

```
0='Non-Absentee'                1='Absentee'
2='Dummy Record'    /*Treat as Absentee. Found in 1996 and 2001*/;
```

VAR: PerType	Personal Record Type	1981,1986,1991,1996,2001

Format: fPRecT

```
1='Absentee'       3='NZ Adult'       4='NZ Child';
```

SEX FORMAT		
VAR: Sex	Sex	1981,1986,1991,1996,2001
VAR: SexOc	Sex of Head of H/H	1996
VAR: SexOc	Sex of Occupier of H/H	1986
VAR: SexPr	Sex of Parent	1991

Format: fvsex

```
1='Males'        2='Females';
```

AGE FORMATS		
VAR: AgeC_mths	Age at Census (months)	1981,1986,1991,1996
VAR: AgeD_mths	Age at Death (months)	1981,1986,1991,1996

Note: Values in data-set are single months, not grouped

Format: f5AgM

```
  0 -<  60=' 0- 4 yrs'     60 -< 120=' 5- 9 yrs'    120 -< 180='10-14 yrs'
180 -< 240='15-19 yrs'    240 -< 300='20-24 yrs'    300 -< 360='25-29 yrs'
360 -< 420='30-34 yrs'    420 -< 480='35-39 yrs'    480 -< 540='40-44 yrs'
540 -< 600='45-49 yrs'    600 -< 660='50-54 yrs'    660 -< 720='55-59 yrs'
720 -< 780='60-64 yrs'    780 -< 840='65-69 yrs'    840 -< 900='70-74 yrs'
900 -< 960='75-79 yrs'         .,999='Miss Age';
```

VAR: AgeC_mths	Age at Census (months)	2001
VAR: AgeD_mths	Age at Death (months)	2001

Note: Values in data-set are single months, not grouped

Note: Ages >=80 (960mths) in 1981-1996 data-sets are coded as 999

Note: Ages >=97 (1164mths) in 2001 data-set are coded as 1164

This version deals with ages >=80 and <97 separately so will mainly be used for 2001 analyses

Format: f5AgMO

```
  0 -<  60=' 0- 4 yrs'     60 -< 120=' 5- 9 yrs'    120 -< 180='10-14 yrs'
180 -< 240='15-19 yrs'    240 -< 300='20-24 yrs'    300 -< 360='25-29 yrs'
360 -< 420='30-34 yrs'    420 -< 480='35-39 yrs'    480 -< 540='40-44 yrs'
540 -< 600='45-49 yrs'    600 -< 660='50-54 yrs'    660 -< 720='55-59 yrs'
720 -< 780='60-64 yrs'    780 -< 840='65-69 yrs'    840 -< 900='70-74 yrs'
900 -< 960='75-79 yrs'    960 -< 1020='80-84 yrs'   1020 - high ='85+yrs'
 .='Miss Age';
```

VAR: AgeC_yrs	Age at Census (years)	1981,1986,1991,1996,2001

Note: Values in data-set are single years, not grouped
Note: Ages >=80 in 1981-1996 data-sets are coded as 99
Note: Ages >=97 in 2001 data-set are coded as 97

Format: f5AgY

```
 0 -<  5=' 0- 4 yrs'       5 -< 10=' 5- 9 yrs'      10 -< 15='10-14 yrs'
15 -< 20='15-19 yrs'      20 -< 25='20-24 yrs'      25 -< 30='25-29 yrs'
30 -< 35='30-34 yrs'      35 -< 40='35-39 yrs'      40 -< 45='40-44 yrs'
45 -< 50='45-49 yrs'      50 -< 55='50-54 yrs'      55 -< 60='55-59 yrs'
60 -< 65='60-64 yrs'      65 -< 70='65-69 yrs'      70 -< 75='70-74 yrs'
75 -< 80='75-79 yrs'
80 -< 85='80-84 yrs'      85 -< 90='85-89 yrs'      90 -< 95='90-94 yrs'
95 -< 97='95-96 yrs'            97='97+ yrs'            .,99='Miss Age';
```

Used on AgeC_yrs to form AgeC_5yr **1981,1986,1991,1996,2001**

Note: Ages >=80 in 1981-1996 data-sets are coded as 99
Note: Ages >=97 in 2001 data-set are coded as 97

inFormat: i5year

```
 0 -<  5= 0     5 -< 10= 5    10 -< 15=10    15 -< 20=15    20 -< 25=20
25 -< 30=25    30 -< 35=30    35 -< 40=35    40 -< 45=40    45 -< 50=45
50 -< 55=50    55 -< 60=55    60 -< 65=60    65 -< 70=65    70 -< 75=70
75 -< 80=75
80 -< 85=80    85 -< 90=85    90 -< 95=90    95 -< 97=95          97=97
other=99;
```

Could be used on AgeC_mths or AgeD_mths to form AgeC_5yr or AgeD_5yr **1981,1986,1991,1996,2001**

Note: Ages >=80 (960mths) in 1981-1996 data-sets are coded as 999
Note: Ages >=97 (1164mths) in 2001 data-set are coded as 1164
This version deals with ages >=80 and <97 separately so will mainly be used for 2001 analyses

inFormat: i5AgGO

```
  0 -<   60= 0     60 -<  120= 5    120 -<  180=10     180 -<  240=15
240 -<  300=20    300 -<  360=25    360 -<  420=30     420 -<  480=35
480 -<  540=40    540 -<  600=45    600 -<  660=50     660 -<  720=55
720 -<  780=60    780 -<  840=65    840 -<  900=70     900 -<  960=75
960 -< 1020=80   1020 -< 1080=85   1080 -< 1140=90    1140 -< 1164=95
       1164=97          other=99;
```

VAR: AgeC_5yr **Age at Census (5 year age groups)** **1981,1986,1991,1996,2001**

Note: Variable not currently created for 2001 but could use i5AgGO. and then this
Note: Ages >=80 in 1981-1996 data-sets are coded as 99
Note: Ages >=97 in 2001 data-set are coded as 97

Format: f5AgG

```
  0=' 0- 4 yrs'      5=' 5- 9 yrs'     10='10-14 yrs'     15='15-19 yrs'
 20='20-24 yrs'     25='25-29 yrs'     30='30-34 yrs'     35='35-39 yrs'
 40='40-44 yrs'     45='45-49 yrs'     50='50-54 yrs'     55='55-59 yrs'
 60='60-64 yrs'     65='65-69 yrs'     70='70-74 yrs'     75='75-79 yrs'
 80='80-84 yrs'     85='85-89 yrs'     90='90-94 yrs'     95='95-96 yrs'
 97='97+ yrs'       99='Miss Age';
```

Used on AgeC_yrs to form AgeC_Gp **1981,1986,1991,1996**

inFormat: inage

```
 0-<15=1     15-<25=2     25-<45=3     45-<65=4     65-<75=5     75-<80=6
    99=.;
```

VAR: AgeC_Gp	Age at Census (5 Std Groups)	1981,1986,1991,1996

Format: fAgeC

```
1=' 0-14 yrs'       2='15-24 yrs'       3='25-44 yrs'
4='45-64 yrs'       5='65-74 yrs'       6='75-79 yrs'
7='45-59 yrs'       8='60-77 yrs'       .='Missing';
```

ETHNICITY FORMATS

VAR: EthCenDet	Ethnicity -Detailed	1981

Format: f81EthD

```
 1='Full Mäori'                    2='Full Pacific'
 3='Full Asian'                    4='Full Others'
 5='3/4 Mäori, 1/4 Pacific'        6='3/4 Mäori, 1/4 Others'
 7='3/4 Pacific, 1/4 Maori'        8='3/4 Pacific, 1/4 Others'
 9='3/4 Asian, 1/4 Others'        10='3/4 Others, 1/4 Maori'
11='3/4 Others, 1/4 Pacific'      12='3/4 Others, 1/4 Asian'
13='1/2 Mäori, 1/2 Pacific'       14='1/2 Mäori, 1/2 Asian'
15='1/2 Mäori, 1/2 Others'        16='1/2 Pacific, 1/2 Asian'
17='1/2 Pacific, 1/2 Others'      18='1/2 Asian, 1/2 Others'
99='Not Specified';
```

VAR: EthCenDet	Ethnicity -Detailed	1991

Format: f91EthD

```
 1='NZ European Only'                          2='NZ European/Other Europeans'
 3='Other Europeans Only'                      4='European/NZ Mäori'
 5='European/Samoan'                           6='European/Cook Island Mäori'
 7='European/Tongan'                           8='European/Niuean'
 9='European/Tokelauan'                       10='European/Other P.I. Polynesian'
11='European/Chinese'                         12='European/Indian'
13='European/Fijian'                          14='European/Other Single Ethnic Group'
15='NZ Mäori Only'                            16='NZ Mäori/Samoan'
17='NZ Mäori/Cook Island Maori'               18='NZ Mäori/Tongan'
19='NZ Mäori/Niuean'                          20='NZ Mäori/Tokelauan'
21='NZ Mäori/Other P.I. Polynesian'           22='NZ Mäori/Chinese'
23='NZ Mäori/Indian'                          24='NZ Mäori/Fijian'
25='NZ Mäori/Other Single Ethnic Group'       26='Samoan Only'
27='Samoan/Cook Island Mäori'                 28='Samoan/Tongan'
29='Samoan/Niuean'                            30='Samoan/Tokelauan'
31='Samoan/Other P.I. Polynesian'             32='Samoan/Chinese'
33='Samoan/Indian'                            34='Samoan/Fijian'
35='Cook Island Mäori Only'                   36='Cook Island Mäori/Tongan'
37='Cook Island Mäori/Niuean'                 38='Cook Island Mäori/Tokelauan'
39='Cook Island Mäori/Other P.I. Polynesians' 40='Cook Island Mäori/Chinese'
41='Cook Island Mäori/Indian'                 42='Cook Island Mäori/Fijian'
43='Tongan Only'                              44='Tongan/Niuean'
45='Tongan/Tokelauan'                         46='Tongan/Other P.I. Polynesian'
47='Tongan/Chinese'                           48='Tongan/Indian'
49='Tongan/Fijian'                            50='Niuean Only'
51='Niuean/Tokelauan'                         52='Niuean/Other P.I. Polynesian'
53='Niuean/Chinese'                           54='Niuean/Indian'
55='Niuean/Fijian'                            56='Tokelauan Only'
57='Tokelauan/Other P.I. Polynesian'          58='Tokelauan/Chinese'
59='Tokelauan/Indian'                         60='Tokelauan/Fijian'
61='Other Single P.I. Polynesians'            62='Fijian Only'
63='Other Single Pacific Islanders (excludes Polynesians)'
64='Other Two Ethnic Groups (at least one is Pacific Islander)'
65='Chinese Only'                             66='Indian Only'
67='Chinese/Indian'                           68='Vietnamese Only'
69='Japanese Only'                            70='Kampuchean Only'
```

```
71='Sri Lankan Only'                          72='Other Single Ethnic Groups Only'
73='Other Combinations of Two Ethnic Groups'
74='Three Ethnic Groups (NZ Mäori/Pacific Islander/Other)'
75='Three Ethnic Groups (NZ Mäori/Not Pacific Islander/Other)'
76='Three Ethnic Groups (Pacific Islander/Not NZ Mäori/Other)'
77='Three Ethnic Groups (Not NZ Mäori/Not Pacific Islander/Other)'
99='Not Specified'                            .='Not Applicable';
```

Used on EthCenDet to create EthCenPr4	1981

inFormat: i81d4P

```
1,5,6,7,10,13,14,15=1      2,8,11,16,17=2        3,9,12,18=4
4=5                              other=9;
```

Used on EthCenDet to create EthCenSol4	1981

inFormat: i81d4S

```
1,5,6,13,14,15=1           2,7,8,16,17=2        3,9,18=4
4,10,11,12=5                     other=9;
```

Used on EthCenDet to create EthCenPr3	1981,1986,1991,1996,2001

inFormat: i81d3P

```
1,5,6,7,10,13,14,15=1      2,8,11,16,17=2
3,9,12,18,4=3                    other=9;
```

Used on EthCenDet to create EthCenSol3	1981,1986,1991,1996,2001

inFormat: i81d3S

```
1,5,6,13,14,15=1            2,7,8,16,17=2
3,9,18,4,10,11,12=3              other=9;
```

Used on EthCenDet to create EthPacific	1981

inFormat: i81Pac

```
2,5,7,8,11,13,16,17=2            other=7;
```

VAR: EthCenPr3	Ethnicity -Prioritised	1981,1986,1991,1996
VAR: EthCenPr4	Ethnicity -Prioritised	1981,1986,1991,1996
VAR: EthCenSol3	Ethnicity -Sole	1981,1986,1996
VAR: EthCenSol3	Ethnicity -Sole*	1991
VAR: EthCenSol4	Ethnicity -Sole	1981,1986,1991,1996
VAR: EthCenPr3	Ethnicity -Prioritised (no missings)	2001
VAR: PrEth4	Prioritised Ethnicity	2001
VAR: EthPacific	Ethnicity - Any Pacific	1981,1986,1991,1996

Format: f4eth

```
1='Mäori'                 2='Pacific People'         3='NonMäoriNonPac'
4='Asian'                 5='NonMäoriNonPacNonAs'    6='Non-Mäori'
7='Non-Pacific'           9='Missing';
```

VAR: EthCenGp6_A	Ethnicity -A	1986,1991,1996
VAR: EthCenGp6_B	Ethnicity -B	1986,1991,1996
VAR: EthCenGp6_C	Ethnicity -C	1986,1991,1996

Format: fdeth

```
1='NZ Mäori'              2='Pacific People'         4='Asian'
6='NZ European/Pakeha'    7='All Other Groups'       9='Missing';
```

VAR: EthCenPr5	Ethnicity -Prioritised*	1991

VAR: EthCenSol5	Ethnicity -Sole*	1991

Format: fnhiraw

```
  1='Mäori'                2='Pacific People'        3='Asian'
  4='Other'                5='European';
```

VAR: EthCenPr5	Ethnicity -Prioritised*	1996

Format: fraw

```
  1='European'        2='Mäori'                3='Pacific People'
  4='Asian'           5='Other';
```

VAR: EthAsian	Ethnicity -Any Asian	2001
VAR: EthEuro	Ethnicity -Any NonMPA	2001
VAR: EthMaori	Ethnicity -Any Maori	2001
VAR: EthPacific	Ethnicity -Any Pacific	2001

Format: feeth

```
  1='NZ Mäori'        2='Pacific'              4='Asian'
  5='nonMPA'          6='NZ European/Pakeha'   0='Not that ethnicity'
 .,9='Missing';
```

VAR: EthCenDet1	Ethnicity Detailed -1	1996
VAR: EthCenDet2	Ethnicity Detailed -2	1996
VAR: EthCenDet3	Ethnicity Detailed -3	1996
VAR: EthCenDet1	Ethnicity -1	2001
VAR: EthCenDet2	Ethnicity -2	2001
VAR: EthCenDet3	Ethnicity -3	2001
VAR: EthCenDet4	Ethnicity -4	2001
VAR: EthCenDet5	Ethnicity -5	2001
VAR: EthCenDet6	Ethnicity -6	2001

Format: f01eth

```
  11='New Zealand European'                    19='Other European'
  21='Mäori'                                   31='Samoan'
  32='Cook Island Mäori'                       33='Tongan'
  34='Niuean'                                  35='Tokelauan'
  36='Fijian (except Fiji Indian/Indo-Fijian)'
  39='Other Pacific Island (nec)'
  42='Chinese'                        43='Indian'
  49='Other Asian'                    59='Other nec'
  99='Residuals (not specified etc)';
```

VAR: TotAsian	Total Asian	2001
VAR: TotMaori	Total Maori	2001
VAR: TotPacific	Total Pacific	2001

Format: ftoteth

```
 .,9='Missing'                    0='Not Relevant'
   1='Total NZ Mäori'             2='Total Pacific'
   4='Total Asian'                5='nonMPA (European/Other)'
  11='nonM (but P or A)'         12='nonP (but M or A)'
  14='nonA (but M or P)'         21='non Mäori'
  22='non Pacific'               24='non Asian';
```

MAORI ANCESTRY OR DESCENT FORMATS

VAR: MaoriDes	Maori Descent Indicator	1981

Format: f81Maor

```
0='Non-Mäori Descent'    1='Mäori Descent'    .='Missing';
```

VAR: MaoriDes	Maori Descent Indicator	1986

Format: f86Maor

```
0='Non-Mäori Origin'     1='Mäori Origin'     .='Missing';
```

VAR: MaoriDes	Maori Descent Indicator	2001

Format: f01Maor

```
1='Mäori Descent'             2='No Mäori Descent'
3='Yes & No Mäori Descent'    4='Don''t Know'                5='Yes & Don''t Know'
6='No & Don''t Know'          7='Response Unidentifiable'    9='Not Stated';
```

VAR: MaoriAnc	Maori Ancestry Indicator	1991

Format: f91Maor

```
1='No Mäori Ancestry'         2='Don''t Know'                3='Mäori Ancestry'
9='Not Specified'             .='Not Applicable';
```

VAR: MaoriAnc	Maori Ancestry Indicator	1996

Format: f96Maor

```
1='Mäori Ancestry'            2='No Mäori Ancestry'          3='Don''t Know'
9='Not Specified'           .,8='Missing or Not Applicable';
```

COUNTRY OF BIRTH FORMAT

VAR: BirthGp	Country of Birth	1981,1986,1991,1996,2001

Format: fBthGp

```
1='Born NZ'                2='Born Australia'       3='Born British Isles'
5='Born Pacific Islands'   8='Born Asia'            9='Born Elsewhere'
4='Born Europe [->9]'      6='Born Africa [->9]'    7='Born Americas [->9]'
.,0='Missing';
```

LANGUAGES SPOKEN FORMATS

VAR: LangInd	Official Language Indicator	1996

Format: f96Lang

```
1='English but not NZ Mäori'       2='NZ Mäori but not English'
3='English and NZ Mäori'           4='Neither English nor NZ Mäori'
5='No Language'                    6='Not Applicable'
9='Not Specified';
```

VAR: LangInd	Official Language Indicator	2001

Format: f01Lang

```
1='Mäori Only'                     2='English Only'
3='Mäori and English'              4='Mäori and Other (Not English)'
5='English and Other (Not Mäori)'  6='Mäori, English and Other'
7='Other Language(s) Only (Neither Mäori nor English)'
8='No Language'                   97='Response Unidentifiable'
98='Response Outside Scope'       99='Not Stated';
```

EDUCATION FORMATS

VAR: EdLAllCur	Current Education Attendance Level	1981
VAR: EdLAllPst	Past Education Attendance Level	1981

Format: fAtLev

```
0='No attendance at any places of tertiary education'
1='Still attending primary/secondary school'
```

```
  2='University'
  3='Teachers College'
  4='Polytechnic/Technical Inst./Community College'
  5='Other'
  6='University plus Teachers College'
  7='University plus Polytechnic/Tech Inst./Com. Coll.'
  8='Other Combinations'
 .,9='Not Specified';
```

VAR: EdLAllHgh	Highest Level of Education Attendance	1981

Format: fEdAtt

```
  1='Still Attending'                  2='No Secondary'
  3='Secondary to 5th Form'            4='6th Form'
  5='7th Form'                         6='University'
  7='Teachers Training College'        8='Polytech/Tech Inst./Com. Coll.'
  9='University & Teachers College'   10='Univ./Polytech/Tech/Com. Coll.'
 11='Other Tertiary'                 .,99='Not Specified';
```

VAR: EdLSchHgh	School Attendance Level	1981

Format: fscat

```
  1='No primary or secondary schooling'
  2='Primary or Intermediate, Form 2 (Std 6) or below'
  3='Form 3'            4='Form 4'            5='Form 5'
  6='Form 6'            7='Form 7'           .,9='Not Specified';
```

VAR: EdQAll_A	First Grouped Qualification Gained	1981
VAR: EdQAll_B	Second Grouped Qualification Gained	1981
VAR: EdQAll_C	Third Grouped Qualification Gained	1981
VAR: EdQAll_D	Fourth Grouped Qualification Gained	1981

Format: f81qual

```
  1='Still at School'                      2='Doctorate & Masterate'
  3='Bachelorate'                          4='Post-Graduate Diplomas'
  5='Under-Graduate Diplomas & Certificates' 6='Non-University Qualifications'
  9='Unidentified or Not Specified'        .='Missing';
```

VAR: EdQAllHgh	Highest Qualification Obtained	1981

Format: f81HQal

```
  1='Post Graduate Degree or Degree'
  2='Undergraduate Degree, NZ Cert/Diploma Both NZC & Techn. C,Techn. Cert,
     Teaching/Nursing'
  3='Trade Certificates, other Tertiary Qualification'
  4='Higher School Certificate/Bursary, Sixth Form Certificate'
  5='School Certificate'                   6='Other School Qualification'
  7='Still at School'                      8='No Qualification'
  9='Not Specified';
```

VAR: EdQAllHgh	Highest Qualification Gained (SNZ Protocol)	1986

Format: f86HQal

```
  1='Postgraduate Degree or Degree'
  2='Undergraduate Degree, NZ Cert/Diploma Both NZC & Technical,Techn. Cert,
     Teacher/Nursing'
  3='Trade Certificates, other Tertiary Qualification'
  4='Higher School Certificate/Bursary,Sixth Form Certificate'
  5='School Certificate'                   6='Other School Qualification'
  7='Still at School'                      8='No Qualification'
  9='Not Specified';
```

VAR: EdQAllHgh | **Highest Qualification Obtained** | **1991**

Format: f91HQ

```
  1='Postgraduates Degree'                  2='Bachelors Degree'
  3='Under Graduate Certificate/Diploma'    4='Technicians Certificate'
  5='Teachers/Nurses Certificate/Diploma'   6='Trade Certificate'
  7='Other Tertiary Qualifications'
  8='University Bursary/Scholarship/Higher School Leaving Cert'
  9='Sixth Form Certificate/University Entrance'
 10='School Certificate'
 11='Other School Qualifications (includes Overseas)'
 12='Still at School'                      13='No Qualifications'
.,14='Not Specified';
```

VAR: EdQAllHgh | **Derived Highest Qualification Obtained** | **1996**

Format: f96HQal

```
  1='School Certificate'           2='Sixth Form Certificate'
  3='Higher School Certificate'    4='Bachelor Degree'
  5='Higher Degree'                6='Other School Qualification'
  7='No Qualification'             8='Other Post-School Qualification'
  9='Not Specified';
```

VAR: EdQAllHgh | **Derived Highest Qualification Obtained** | **2001**

Format: f01HQal

```
  0='No Qualification'                       1='Fifth Form Qualification'
  2='Sixth Form Qualification'               3='Higher School Qualification'
  4='Other NZ Secondary School Qualification'
  5='Overseas Secondary School Qualification'
  6='Basic Vocational Qualification'         7='Skilled Vocational Qualification'
  8='Intermediate Vocational Qualification'  9='Advanced Vocational Qualification'
 10='Bachelor Degree'                       11='Higher Degree'
 97='Highest Qualification Unidentifiable'  99='Not Stated';
```

VAR: EdQAllHghDet | **Highest Qualification Obtained** | **1996**

Format: f96HQ

```
  9='Higher Degree'                       8='Bachelor Degree'
  7='Advanced Vocational Qualification'   6='Intermediate Vocational Qualification'
  5='Skilled Vocational Qualification'    4='Basic Vocational Qualification'
 88='Post School Qualification, not applicable'
 87='Post School Qualification, unidentifiable'
 89='Post School Qualification, not specified'
  3='Higher School Qualification'         2='Sixth Form Qualification'
  1='School Certificate Qualification'   74='Overseas School Qualification'
 78='School Qualification, not applicable'
 76='School Qualification, not identifiable'
 79='School Qualification, not specified'
 77='No Qualification'                .,99='Not Specified';
```

VAR: EdQSchHgh | **Highest School Qualification** | **1981**

Format: f81sql

```
  0='No School Qualification'
  1='University Scholarship, or A or B Bursary'
  2='Higher School Certificate or Higher Leaving Cert'
  3='University Entrance, Matriculation'
  4='Endorsed School Cert, or Sixth Form Cert in >=4 subj'
  5='Sixth Form Certificate in 1, 2 or 3 subjects'
  6='School Certificate, or >=3 subject passes in School Cert subj'
  7='Pass in 1 or 2 School Certificate subjects'
  8='Other (must be valid qualifications)'
```

```
.,9='Not Specified';
```

VAR: EdQSchHgh | **Highest School Qualification** | **1986**

Format: f86sql

```
  1='No School Qualification'
  2='School Certificate, 1 or 2 Passes'
  3='School Certificate, >=3 Passes'
  4='6th Form Certificate, Endorsed School Cert'
  5='University Entrance, Matriculation'
  6='Higher School Cert or Higher Leaving Cert'
  7='University Bursary or Scholarship'
  8='Other'
.,9='Not Specified';
```

VAR: EdQSchHgh | **Highest School Qualification** | **1991**

Format: f91sql

```
  1='No School Qualifications'               2='School Certificate (>=1 subjects)'
  3='Sixth Form Cert, Univ Entrance (>=1 subj)'
  4='Higher School Cert, Higher Leaving Cert'
  5='University Bursary or Scholarship'      6='Overseas Qualification'
  7='Other School Qualification'            .,9='Not Specified';
```

VAR: EdQSchHgh | **Highest School Qualification** | **1996**

Format: f96sql

```
 1O='NZ School Certificate in >=1 subj'
 2O='NZ Sixth Form Certificate in >=1 subj'
 3O='NZ University Entrance before 1986 in >=1 subj'
 4O='NZ Higher School Cert or Higher Leaving Cert'
 5O='NZ University Bursary, Entrance or Scholarship'
 7O='Overseas Secondary School Qual not further defined'
 71='Overseas Equivalent to School Certificate Qual'
 72='Overseas Equivalent to Sixth Form Qual'
 73='Overseas Equivalent to Higher School Qual'
 74='Other Overseas Qualification nec'        88='Tertiary Qualification'
 98='Unidentifiable'                         .,99='Not Specified';
```

VAR: EdQSchHgh | **Highest School Qualification** | **2001**

Format: f01sql

```
 O='No Secondary School Qualification'
 1='NZ School Cert. in >=1 Subjects or Nat. Cert. Lev 1'
 2='NZ Sixth Form Cert. in >=1 Subjects or Nat. Cert. Lev 2'
 3='NZ University Entrance Before 1986 in >=1 Subjects'
 4='NZ Higher School Certificate or Higher Leaving Cert.'
 5='University Entrance Qual. From NZ University Bursary'
 6='NZ A or B Bursary, Scholarship or Nat. Cert. Lev 3'
 7='Other NZ Secondary School Qualification'
 8='Overseas Secondary School Qualification'
44='Don''t Know'55='Refused to Answer'
77='Response Unidentifiable'                 88='Response Outside Scope'
99='Not Stated';
```

VAR: EdQTer_A | **Tertiary Qual Gained, Group A** | **1991**

Format: f91TQa

```
  0='Neither Trade Cert/Advanced Trade Cert or Nursing Cert/Diploma'
  1='Trade Certificate/Advanced Trade Certificate'
  2='Both Trade Cert/Advanced Trade Cert and Nursing Cert/Diploma'
  3='Nursing Certificate'                     7='Still at School'
.,9='Not Specified';
```

VAR: EdQTer_A	Tertiary Qual 1 Attainment Level	1996
VAR: EdQTer_B	Tertiary Qual 2 Attainment Level	1996

Format: f96Ter

```
  0='Category of Attainment Not Stated'        1='School Certificate'
  2='Sixth Form Qualification'                 3='Higher School Qualification'
  4='Basic Vocational Qualification'           5='Skilled Vocational Qualification'
  6='Intermediate Vocational Qualification'    7='Advanced Vocational Qualification'
  8='Bachelors Degree' 9='Higher Degree'
 88='Category of Attainment Unidentifiable'   .,99='Missing';
```

VAR: EdQTer_A	Tertiary Qual 1 Attainment Level	2001

Format: f01Ter

```
  0='No Post-School Qualification'         4='Basic Vocational Qualification'
  5='Skilled Vocational Qualification'     6='Intermediate Vocational Qualification'
  7='Advanced Vocational Qualification'    8='Bachelor Degree'
  9='Higher Degree'
 33='Level of Attainment Not Given (but Field of Study Given)'
 44='Don''t Know'                          55='Refused to Answer'
 77='Response Unidentifiable'              88='Response Outside Scope'
 99='Not Stated';
```

VAR: EdQTer_B	Tertiary Qual Gained, Group B	1991

Format: f91TQb

```
  0='Neither NZ certificate/Diploma or Technician Certificate'
  1='NZ Certificate/Diploma'
  2='Both NZ Certificate/Diploma and Technicians Certificate'
  3='Technicians Certificate'
  7='Still at School'                  .,9='Not Specified';
```

VAR: EdQTer_C	Tertiary Qual Gained, Group C	1991

Format: f91TQc

```
  0='Neither Teacher Cert/Diploma or University Cert/Diploma below Bachelor level'
  1='Teachers Certificate/Diploma'
  2='Both Teachers Certificate/Diploma and University'
  3='University certificate/Diploma below Bachelors Level'
  7='Still at School'                  .,9='Not Specified';
```

VAR: EdQTer_D	Tertiary Qual Gained, Group D	1991

Format: f91TQd

```
  0='Neither Bachelor Degree or Post Graduate Degree Cert/Diploma'
  1='Bachelors Degree'
  2='Both Bachelors Degree and Postgraduate Degree Cert/Diploma'
  3='Postgraduate Degree Certificate/Diploma'
  7='Still at School'                  .,9='Not Specified';
```

VAR: EdQTer_E	Tertiary Qual Gained, Group E	1991

Format: f91TQe

```
  0='No Other Qualifications'            1='???Unsure'
  7='Still at School'                  .,9='Not Specified';
```

VAR: EdQTerHgh	Tertiary Qualification Gained	1981

Format: f81TQ

```
  1='Still at School'                          2='No Qualification'
  3='Trade and Non-University Qualification'   4='Undergraduate'
```

```
   5='Bachelor and Postgraduate'              6='Other'
   7='Not Specified';
```

VAR: EdQTerHgh	Tertiary Qualification Gained	1986

Format: f86tql

```
   2='Still at School, or No Qualifications' 3='Trade Certificate'
   4='Nursing Certificate/Diploma'           5='Teachers Certificate/Diploma'
   6='Technicians Certificate'               7='NZ Certificate/Diploma'
   8='Undergraduate Certificate/Diploma'     9='Baccalureate'
  10='Postgraduate Degree/Cert/Diploma'     11='Other'
  12='Two Tertiary Qualifications'          13='Three or more Tertiary Qualifications'
.,99='Not Specified';
```

Aggregate Highest Qualification Variable into HQA variable	1981,1986

inFormat: i81HQA

```
8=1        4,5,6=2          1,2,3=3            7,9,.=.;
```

Aggregate Highest Qualification Variable into HQA variable	1991

inFormat: i91HQA

```
13=1       8,9,10,11=2      1,2,3,4,5,6,7=3    12,14,.=.;
```

Aggregate Highest Qualification Variable into HQA variable	1996

inFormat: i96HQA

```
7=1        1,2,3,6=2        4,5,8=3            9,.=.;
```

Aggregate Highest Qualification Variable into HQA variable	2001

inFormat: i01HQA

```
0=1        1,2,3,4,5=2      6,7,8,9,10,11=3    97,99,.=.;
```

Education format valid for 2 or 3 level variables	1981,1986,1991,1996,2001

Format: fHQA

```
  1='No Qualifications'                  2='School Qualifications'
  3='Post-School Qualifications'         4='School or Post-School Qualifications'
.,9='Missing, Not Applicable, Still at School';
```

INCOME FORMATS

VAR: H_THInc	Total Household Income	1981
VAR: I_TInc	Total Personal Income	1981

Format: f81Inc

```
   0='Nil Income'                         1='     $1 -   $249'
   2='   $250 -   $499'                   3='   $500 -   $999'
   4=' $1,000 -  $1,999'                  5=' $2,000 -  $3,499'
   6=' $3,500 -  $4,999'                  7=' $5,000 -  $6,499'
   8=' $6,500 -  $7,999'                  9=' $8,000 -  $9,999'
  10='$10,000 - $11,999'                 11='$12,000 - $13,999'
  12='$14,000 - $15,999'                 13='$16,000 - $17,999'
  14='$18,000 - $19,999'                 15='$20,000 - $22,499'
  16='$22,500 - $24,999'                 17='$25,000 - $27,499'
  18='$27,500 - $29,999'                 19='$30,000 - $34,999'
  20='$35,000 - $39,999'                 21='$40,000 - $49,999'
  22='$50,000 - $59,999'                 23='$60,000 and over'
97,98='Not Available'                   .,99='Not Specified';
```

VAR: H_THInc	Total Household Income	1986
VAR: I_TInc	Total Personal Income	1986

Format: f86Inc

```
  1='Nil or loss'                    2='     $1 -  $1,000'
  3=' $1,001 -  $2,500'              4=' $2,501 -  $5,000'
  5=' $5,001 -  $7,500'              6=' $7,501 - $10,000'
  7='$10,001 - $12,500'              8='$12,501 - $15,000'
  9='$15,001 - $17,500'             10='$17,501 - $20,000'
 11='$20,001 - $25,000'             12='$25,001 - $30,000'
 13='$30,001 - $35,000'             14='$35,001 - $40,000'
 15='$40,001 - $50,000'             16='$50,001 and over'
 98='Not Available'                ,99='Not Specified';
```

VAR: H_THInc	**Total Household Income**	**1991**
VAR: I_TInc	**Total Personal Income**	**1991**

Format: f91Inc

```
  1='Nil or loss'                    2='     $1 -  $2,500'
  3=' $2,501 -  $5,000'              4=' $5,001 -  $7,500'
  5=' $7,501 - $10,000'              6='$10,001 - $15,000'
  7='$15,001 - $20,000'              8='$20,001 - $25,000'
  9='$25,001 - $30,000'             10='$30,001 - $40,000'
 11='$40,001 - $50,000'             12='$50,001 - $70,000'
 13='$70,001 and over'              98='Not Available'
.,99='Not Specified';
```

VAR: H_THInc	**Total Household Income**	**1996,2001**
VAR: I_TInc	**Total Personal Income**	**1996,2001**

Format: f96Inc

```
  1='Loss'                           2='Zero Income'
  3='     $1 -  $5,000'              4=' $5,001 - $10,000'
  5='$10,001 - $15,000'              6='$15,001 - $20,000'
  7='$20,001 - $25,000'              8='$25,001 - $30,000'
  9='$30,001 - $40,000'             10='$40,001 - $50,000'
 11='$50,001 - $70,000'             12='$70,001 -$100,000'
 13='$100,001 and over'             88='Unidentifiable'
 98='Not Available'                ,99='Not Specified';
```

EQUIVALISED INCOME RELEVANT FORMATS

Final values to use for midpts and values for incomes for each year

Midpoints to be used for 1981 Income Variable for calculating Eq. Incomes

inFormat: i81Mid

```
 0=0          1=125        2=375        3=750        4=1500
 5=2750       6=4250       7=5750       8=7250       9=9000
10=11000     11=13000     12=15000     13=17000     14=19000
15=21250     16=23750     17=26250     18=28750     19=32500
20=37500     21=45000     22=55000     23=81213;
```

Median Income to be used for 1986 Income Variable for calculating Eq. Incomes

inFormat: i86Med

```
 1=0          2=445        3=1641       4=3626       5=6254
 6=8651       7=11255      8=13811      9=16163     10=18626
11=22200     12=26888     13=32150     14=36927     15=43748
16=60000;
```

Median Income to be used for 1991 Income Variable for calculating Eq. Incomes

inFormat: i91Med

```
 1=0          2=850        3=3593       4=6208       5=8761
```

```
 6=11571        7=17436         8=22420         9=27321        10=34545
11=44019       12=56467        13=90200;
```

Median Income to be used for 1996 Income Variable for calculating Eq. Incomes

inFormat: i96Med

```
 1=-4285        2=0             3=1675          4=8559          5=12528
 6=17281        7=22347         8=27370         9=34360        10=43934
11=57426       12=81542        13=135600;
```

Median Income to be used for 2001 Income Variable for calculating Eq. Incomes

inFormat: i01Med

```
 1=-2440        2=0             3=1981          4=8067          5=12547
 6=17236        7=22373         8=27524         9=34668        10=44164
11=56912       12=80531        13=135948;
```

Median Income to be used for 2006 Income Variable for calculating Eq. Incomes

inFormat: i06Med

```
 1=-6998        2=0             3=1604          4=7840          5=12345
 6=17084        7=22201         8=27203         9=32119        10=37131
11=44168       12=57514        13=80725       14=135007;      /*For 2006 Jensen*/
```

DERIVED EQUIVALISED INCOMES (Applicable for all years)

Generated IncAb3w (3 level equivalised income All Years)

Format: f3EInc

```
1='Lowest Income'       2='Middle'              3='Highest Income';
```

Generated IncAb5w (5 level equivalised income All Years)

Format: f5EInc

```
1='Lowest Income'       2='Second Income'       3='Middle'
4='Fourth Income'       5='Highest Income';
```

SOURCE OF INCOME FORMATS

VAR: H_IncAC	**H/H Inc. Srce -ACC Regular Payments**	**1996,2001**
VAR: H_IncDP	**H/H Inc. Srce -Domestic Purposes Benefit**	**1996,2001**
VAR: H_IncGB	**H/H Inc. Srce -Other Government Benefits**	**1996,2001**
VAR: H_IncIB	**H/H Inc. Srce -Invalids Benefit**	**1996,2001**
VAR: H_IncSB	**H/H Inc. Srce -Sickness Benefit**	**1996,2001**
VAR: H_IncSE	**H/H Inc. Srce -Self-employment**	**1996,2001**
VAR: H_IncUB	**H/H Inc. Srce -Unemployment Benefit**	**1996,2001**
VAR: H_IncWS	**H/H Inc. Srce -Wages/Salary etc.**	**1996,2001**
VAR: I_PIS_AC	**Personal Inc. Srce -ACC Regular Payments**	**1996,2001**
VAR: I_PIS_DP	**Personal Inc. Srce -Domestic Purposes Benefit**	**1996,2001**
VAR: I_PIS_GB	**Personal Inc. Srce -Other Government Benefits**	**1996,2001**
VAR: I_PIS_IB	**Personal Inc. Srce -Invalids Benefit**	**1996,2001**
VAR: I_PIS_SB	**Personal Inc. Srce -Sickness Benefit**	**1996,2001**
VAR: I_PIS_SE	**Personal Inc. Srce -Self-employment**	**1996,2001**
VAR: I_PIS_UB	**Personal Inc. Srce -Unemployment Benefit**	**1996,2001**
VAR: I_PIS_WS	**Personal Inc. Srce -Wages/Salary etc.**	**1996,2001**

Format: fIncS

```
  1='Wages, salary, commissions, bonuses etc. paid by employer'
```

```
   2='Self-employment, or business you own and work in'
   3='Interest, dividends, rent, other investments'
   4='ACC regular payments (or Private Insurance Payments)'
   5='NZ superannuation (or Veterans Pensions)'
   6='Other superannuation, pensions, annuities'
   7='Unemployment benefit'              8,28='Domestic purposes benefit'
 9,29='Sickness benefit'                   10='Invalid''s benefit'
  11='Student allowance'
  12='Other govt benefits, income support payments or war pensions'
  13='Other sources of income'             14='No Source of Income During That Time'
 .,99='None';
```

INCOME BENEFITS FORMATS

VAR: I_DPB	Domestic Purposes Benefit	1981,1986

Format: fiDPB

```
   0='Did not receive DPB'          1='Received Domestic Purposes Benefit'
   .='Not Applicable';
```

VAR: I_FamBen	Family Benefit	1981,1986

Format: fiFB

```
   0='Did not receive FB'           1='Received Family Benefit'
   .='Not Applicable';
```

VAR: I_FamCare	Family Care Benefit	1986

Format: fiFC

```
   0='Did not receive FC'           1='Received Family Care'
   .='Not Applicable';
```

VAR: I_IncSup	Income Support Payments Indicator	1981,1986

Format: fiIS

```
   0='Did not receive any IS'       1='Received any Income Support'
 .,9='Not Applicable';
```

VAR: I_InvalBen	Invalids Benefit Indicator	1981

Format: fiIB

```
   0='Did not receive IB'           1='Received Invalids Benefit'
   .='Not Applicable';
```

VAR: I_ISP_Der	Income Support Payments -Derived	1991

Format: fi91ISP

```
   1='Family Benefit'                    2='National Superannuation/GRI'
   3='Accident Compensation Weekly Payments' 4='Domestic Purposes Benefit'
   5='Unemployment Benefit'              6='Youth and Student Allowance'
   7='Sickness/Invalids Benefit'         8='War Pension'
   9='Other Support Payments'           10='Family Benefit & Family Support'
  11='Family Benefit & Domestic Purposes Benefit'
  12='Other Combinations of >=2 payments'
  13='No Payments Received'             14='Not Specified'
   .='Not Applicable';
```

VAR: I_ISPA	Income Support Payment Group A	1991
VAR: I_ISPB	Income Support Payment Group B	1991
VAR: I_ISPC	Income Support Payment Group C	1991
VAR: I_ISPD	Income Support Payment Group D	1991
VAR: I_ISPE	Income Support Payment Group E	1991

Format: fi91IG

```
0='Did Not Receive Payment for x'      1='Income Support Payment Code 1'
2='Income Support Payment Code 2'      3='Income Support Payment Code 3'
9='Not Specified'                      .='Not Applicable';
```

VAR: I_OispG	Other Income Support Payments -Grouped	1991

Format: fi91IO

```
11='No Other Income Support Payments'    12='Widows Pension Payments'
13='Disability Allowance Payments'       14='Maintenance from Former Partner'
10='All Other Income Support Payments'    .='Not Applicable';
```

VAR: I_SickBen	Sickness Benefit	1981,1986

Format: fiSick

```
0='Did not receive SB'           1='Received Sickness Benefit'
.='Not Applicable';
```

VAR: I_UnEmpBen	Unemployment Benefit	1981,1986

Format: fiUB

```
0='Did not receive UB'           1='Received Unemployment Benefit'
.='Not Applicable';
```

EMPLOYMENT FORMATS

VAR: EmpSt	Employment Status	1981

Format: f81Emp

```
0='Self-Employed, employing labour'    1='Self-Employed, not employing labour'
2='Wages or salary'                    3='Relative (unpaid) assisting in business'
4='Unemployed & seeking work'
5='Not specified but working >=20 hours weekly'
6='Retired'                            7='Full time student'
8='Household duties (unpaid)'
9='Other persons not working for financial reward'
.='Missing or Not Specified';
```

VAR: EmpSt	Employment Status	1986

Format: f86Emp

```
1='Full-Time Labour Force:Self-Employed (Employees)'
2='Full-Time Labour Force:Self-Employed (No Employees)'
3='Full-Time Labour Force:Wage & Salary Earner'
4='Full-Time Labour Force:Relative Assisting'
5='Full-Time Labour Force:Unemployed'
6='Full-Time Labour Force:Not Specified'
7='Part-Time Labour Force:Self-Employed (Employees)'
8='Part-Time Labour Force:Self-Employed (No Employees)'
9='Part-Time Labour Force:Wage & Salary Earner'
10='Part-Time Labour Force:Relative Assisting'
11='Part-Time Labour Force:Unemployed'
12='Part-Time Labour Force:Not Specified'
13='Non Labour Force'
.='Missing';
```

VAR: EmpSt	Employment Status	1996

Format: f96Emp

```
1='Full-Time Wage & Salary Earner'
2='Full-Time Self-Employed (No Employees)'
3='Full-Time Self-Employed (Employees)'
4='Full-Time Unpaid Family Worker'
```

```
 5='Full-Time Not Specified Status in Employment'
 6='Part-Time Wage & Salary Earner'
 7='Part-Time Self-Employed (No Employees)'
 8='Part-Time Self-Employed (Employees)'
 9='Part-Time Unpaid Family Worker'
10='Part-Time Not Specified Status in Employment'
11='Unemployed and Actively Seeking Work'      12='Not in Labour Force'
13='Labour Force Status Not Available'          .='Missing';
```

VAR: EmpSt	Employment Status	2001

Format: f01Emp

```
 11='Paid Employee'                              12='Employer'
 13='Self-Employed and without Employees'        14='Unpaid Family Worker'
 99='Not Stated';
```

EMPLOYMENT RELATED FORMATS

VAR: HrsWk	Total Hours Worked (per week)	1981

Note: Values in data-set are single numbers, not grouped

Format: f81hwk

```
   0='    0 hours per week'          1- 9=' 1- 9 hours per week'
10-19='10-19 hours per week'         20-29='20-29 hours per week'
30-39='30-39 hours per week'         40-49='40-49 hours per week'
50-59='50-59 hours per week'         60-69='60-69 hours per week'
70-79='70-79 hours per week'         80-89='80-89 hours per week'
90-96='90-96 hours per week'            97='97 or more hours per week'
 .,98='Not Specified';
```

VAR: HrsWk	Total Number of Hours Worked	2001

Note: Values in data-set are single numbers, not grouped

Format: f01hwk

```
   0='    0 hours per week'          1- 9=' 1- 9 hours per week'
 10-19='10-19 hours per week'         20-29='20-29 hours per week'
 30-39='30-39 hours per week'         40-49='40-49 hours per week'
 50-59='50-59 hours per week'         60-69='60-69 hours per week'
 70-79='70-79 hours per week'         80-89='80-89 hours per week'
 90-99='90-99 hours per week'        100-109='100-109 hours per week'
110-119='110-119 hours per week'     120-129='120-129 hours per week'
130-139='130-139 hours per week'     140-149='140-149 hours per week'
150-159='150-159 hours per week'     160-168='160-168 hours per week'
   444='Do not Know'                    555='Refused to Answer'
   777='Response Unidentifiable'        888='Response Outside Scope'
 .,999='Not Specified';
```

VAR: HrsWkG	Total Number of Hours Worked	1996

Format: fhwk

```
  1='0 to <30 hours worked'             2='30 to <50 hours worked'
  3='50 or more hours worked'           .='Missing Hours';
```

INDUSTRY FORMATS

VAR: IndAnz1	ANZSIC Industry (1 xter)	1996,2001

Format: $fANZ

```
'A'='Agriculture, Forestry & Fishing'       'B'='Mining'
'C'='Manufacturing'                         'D'='Electricity, Gas & Water Supply'
'E'='Construction'                          'F'='Wholesale Trade'
'G'='Retail Trade'                          'H'='Accommodation, Cafes & Restaurants'
'I'='Transport & Storage'                   'J'='Communication Services'
```

```
'K'='Finance & Insurance'                    'L'='Property & Business Services'
'M'='Government Administration & Defence'    'N'='Education'
'O'='Health & Community Services'            'P'='Cultural & Recreational Services'
'Q'='Personal & Other Services'        .,'R',' '='Missing';
```

VAR: Industry	Industry 1 Digit Code	1981,1991,1996

Format: f1Ind

```
  1='Agriculture, Hunting, Forestry & Fishing'     2='Mining & Quarrying'
  3='Manufacturing'                                4='Electricity, Gas & Water'
  5='Construction'
  6='Wholesale, Retail Trade & Restaurants & Hotels'
  7='Transport, Storage & Communication'           8='Business & Financial Services'
  9='Community, Social & Personal Services'
.,0='Missing or Not Adequately Defined';
```

VAR: Industry	Industry 2 Digit Code	1986

Format: f2Ind

```
 11='Agriculture & Hunting'                12='Forestry & Logging'
 13='Fishing'                              21='Coal Mining'
 22='Crude Petroleum & Natural Gas Production'
 23='Metal Ore Mining'                     29='Other Mining & Quarrying'
 31='Food, Beverage, Tobacco'              32='Textile, Apparel & Leathergoods'
 33='Wood Processing & Wood Product Manufacture'
 34='Manufacturing of Paper & Paper Products; Printing & Publishing'
 35='Manufacture of Chemicals & of Chemical,Petroleum,Coal,Rubber & Plastic
     Materials'
 36='Concrete,Clay,Glass,Plaster,Masonry,Asbestos & Related Mineral Product
     Manufacture'
 37='Basic Metal Industries'
 38='Manufacture of Fabricated Metal Products,Machinery & Equipment'
 39='Other Manufacturing Industries'
 41='Electry,Gas & Steam'                  42='Water Works & Supply'
 51='Construction of Buildings'            52='Construction other than Buildings'
 53='Ancillary Construction Services'      61='Wholesale Trade'
 62='Retail Trade'                         63='Restaurants & Hotels'
 71='Transport & Storage'                  72='Communication'
 81='Financing'                            82='Insurance'
 83='Real Estate & Business Services'      91='Public Administration & Defence'
 92='Sanitary & Cleaning Services'         93='Social & Related Community Services'
 94='Recreational & Cultural Services'     95='Personal & Household Services'
.,0='Missing or Not Defined Adequately';
```

JOBLESSNESS FORMAT

VAR: Jobless	Joblessness	1996

Format: fJob

```
  1='Jobless-Available & Actively Seeking Work'
  2='Jobless-Available but Not Actively Seeking Work'
  3='Jobless-Actively Seeking Work but Not Available'
  4='Not Jobless-Working'
  5='Not Jobless-Not Available & Not Actively Seeking'
  9='Not Classifiable'
.,8='Missing';
```

LABOUR FORCE STATUS FORMATS

Used on EmpSt to create LabSt	1986

inFormat: i86LFS

```
  1,2,3,4=1       7,8,9,10=2       5,11=3       13=4       6=7       12=8;
```

VAR: LabSt | **Labour Force Status** | **1986**

Format: f86LFS

```
  1='Employed Full-Time'          2='Employed Part-Time'
  3='Unemployed'                  4='Not in Labour Force'
  7='Full-Time:Not Specified'     8='Part-Time:Not Specified'
.,9='Not Specified';
```

VAR: LabSt | **Labour Force Status** | **1981,1996,2001**

Format: f96LFS

```
  1='Employed Full-Time'          2='Employed Part-Time'
  3='Unemployed'                  4='Not in Labour Force'
.,9='Not Specified';
```

VAR: LabSt | **Labour Force Status** | **1991**

Format: f91LFS

```
  1='Gainfully Employed in the Full-Time Labour Force'
  2='Gainfully Employed in the Part-Time Labour Force'
  3='Unemployed & Actively Seeking Full-Time Work'
  4='Unemployed & Actively Seeking Part-Time Work'
  5='Non Labour Force (Seeking Work but Not Available)'
  6='Non Labour Force (Available for Work but Not Seeking)'
  7='Non Labour Force (Not Seeking & Not Available)'
  .='Not Applicable';
```

Generate LabSt3 from 1981, 1986, 1996, 2001 LabSt variable

inFormat: ilab3a

```
1,2,7,8=1         3=2           4=3          .,9=9;
```

Generate LabSt3 from 1991 LabSt variable

inFormat: ilab3b

```
1,2=1           3,4=2        5,6,7=3          .,9=9;
```

Labour Force Formats

Format: femploy

```
1,-1='Employed'           2,-2='Unemployed'       3,-3='Non-Labour' .,9='Missing';
```

Format: f2emp

```
   1='One or More Employed'        2,3='Zero Employed';
```

Format: Flabfor

```
   1='In Labour Force'              2='Not In Lab Force';
```

OCCUPATION FORMATS

Elley Irving from 3 digit NZSCO68 codes according to Neil Pearces concordance

Occ68 used to form O_Elleylrv | **1981,1986,1991,1996**

inFormat: $i3Elnp

```
'011','012','013','021','022','023','024','025','026','027'=1
'051','052','053','061','063','065','075','081','082','090'=1
'110','121','122','129','131','132','139','191','192','195','201','202'=1
'028','029','031','041','042','043','067','069','076','079'=2
'083','084','133','134','135','141','151','159','179','193'=2
'194','199','211','212','219','300','310','441'=2
'014','032','033','034','035','036','037','038','039','054'=3
'062','064','066','068','073','077','149','162','163','171'=3
'172','173','174','175','180','321','322','331','339','342'=3
'351','352','359','392','393','394','395','399','400','421'=3
```

```
'422','431','432','442','443','500','510','581','582','592'=3
'611','612','613','614','615','616','701','702','703','704'=3
'705','706','707','708','709','733','734','832','844','852','861','961'=3
'071','072','074','161','341','360','370','380','391','410'=4
'451','452','490','531','583','589','591','600','617','619'=4
'641','713','753','762','775','776','777','797','811','819'=4
'820','841','842','843','846','847','848','849','851','854'=4
'855','856','857','859','862','871','874','880','893','902'=4
'921','922','923','924','925','926','929','941','951','952'=4
'953','954','955','956','959','969','972','973','981','982','983','989'=4
'520','532','540','560','570','599','621','628','631','632'=5
'649','721','722','723','724','725','726','727','728','729'=5
'735','741','742','743','744','745','749','751','752','754'=5
'755','756','759','761','771','772','773','774','778','781'=5
'782','783','789','791','792','793','794','795','796','799'=5
'812','831','833','834','835','839','845','853','872','873'=5
'891','892','894','895','899','901','910','927','931','939'=5
'943','957','971','974','979','984','985'=5
'551','552','622','623','624','625','626','627','629','711'=6
'712','731','732','779','801','802','803','942','949','986','990','991'=6
'996','998','999','997'=9
.=.
other=99;
```

VAR: O_Elleyirv	**Elley-Irving Index**	**1981,1986,1991,1996**
VAR: O_ElleyirvSp	**Elley-Irving Index (Spouse)**	**1986**
VAR: O_Elleyirv	**Elley-Irving 68 from NZSCO68 (but using NZSCO99)**	**2001**

Format: fEI

```
  1='EI Class 1'                    2='EI Class 2'
  3='EI Class 3'                    4='EI Class 4'
  5='EI Class 5'                    6='EI Class 6'
  7='EI Class 7 (Farmers)'       .,9,99='EI Class 9 (Miss or NS)';
```

Generating and using Elleyirving Class All Years

inFormat: i4EV

```
 1,2=15          3=30          4=40          5,6=55              .,9=99;
```

Format: f4EV

```
 15='Class 1&2'   30='Class 3'   40='Class 4'   55='Class 5&6'      .,99='Missing';
```

EGP from 4 digit NZSCO68 codes

Occ68 (4 digit) used to form O_EGP **1981,1986,1991,1996**

Note: Initially Erikson, Goldthorpe and Portocarero, then modified by Erikson and Goldthorpe (1992)

inFormat: $i4EGP

```
'0110','0120','0131','0132','0134','0135','0139','0211','0212'=1
'0219','0221','0222','0223','0224','0225','0229','0231','0232'=1
'0233','0239','0241','0242','0243','0244','0245','0249','0250'=1
'0260','0270','0281','0289','0291','0292','0293','0294','0299'=1
'0411','0412','0413','0421','0422','0423','0424','0425','0429'=1
'0430','0511','0512','0513','0519','0521','0522','0523','0524'=1
'0525','0529','0531','0532','0533','0534','0535','0536','0539'=1
'0611','0613','0614','0615','0617','0619','0631','0651','0652'=1
'0659','0670','0810','0821','0822','0823','0901','0902','0909'=1
'1101','1102','1103','1104','1109','1211','1219','1221','1290'=1
'1311','1312','1391','1392','1740','1921','1929','2011','2012'=1
```

```
'2019','2021','2022','2029','2111','2119'=1
'0141','0311','0312','0313','0314','0315','0319','0321','0322'=2
'0323','0324','0325','0326','0327','0329','0331','0332','0333'=2
'0334','0339','0341','0342','0349','0350','0360','0370','0380'=2
'0390','0541','0542','0620','0641','0649','0661','0680','0690'=2
'0711','0712','0713','0714','0715','0716','0719','0721','0722'=2
'0731','0740','0750','0761','0762','0763','0771','0779','0791'=2
'0792','0793','0794','0795','0799','0830','0841','0849','1321'=2
'1322','1329','1331','1332','1341','1349','1350','1399','1411'=2
'1412','1419','1490','1510','1591','1592','1593','1594','1599'=2
'1610','1621','1622','1623','1624','1625','1629','1631','1632'=2
'1633','1639','1711','1712','1713','1714','1719','1721','1722'=2
'1731','1732','1739','1750','1791','1799','1801','1802','1803'=2
'1804','1809','1911','1912','1913','1919','1931','1933','1939'=2
'1941','1943','1949','1950','1990','2121','2129','2191','2192'=2
'2193','2199','3001','3009','3101','3102','3109','3510','3520'=2
'3591','4001','4002','4009','4211','4219','4221','4222','4223'=2
'4224','4229','4310','4411','4412','4419','4420','4431','4436'=2
'4439','5001','5002','5003','5004','5009','5822','5823','5824'=2
'5829','5891'=2
'3211','3212','3213','3214','3215','3216','3219','3220','3311'=3
'3312','3313','3314','3315','3316','3319','3391','3392','3393'=3
'3394','3395','3399','3411','3412','3421','3422','3429','3592'=3
'3593','3594','3595','3596','3597','3599','3601','3602','3603'=3
'3609','3801','3802','3803','3804','3809','3911','3912','3913'=3
'3919','3920','3931','3932','3933','3934','3935','3939','3941'=3
'3942','3943','3944','3949','3951','3952','3991','3992','3993'=3
'3994','3999','4321','4322','4511','4512','4513','4514','4515'=3
'4516','4517','4519','4521','4523','4524','4529','4900','5201'=3
'5202','5204','5205','5209','5321','5322','5323','5329','5911'=3
'5912','5919','5920','5991','5994','8621','8622','8629'=3
'4101','4102','4109','5101','5103','5104','5105','5109'=4
'6000','6111','6119','6121','6122','6129','6131','6132','6133'=6
'6134','6139','6141','6142','6143','6144','6145','6149','6151'=6
'6152','6159','6160','6171','6172','6173','6174','6179','6191'=6
'6192','6199'=6
'7010','7020','7030','7040','7050','7060','7070','7091','7092'=7
'7093','7094','7095','7099'=7
'5311','5312','5313','5319','5701','5702','5703','5704','5705'=8
'5709','5811','5812','5819','7111','7112','7113','7114','7119'=8
'7131','7132','7133','7134','7135','7139','7211','7219','7221'=8
'7229','7231','7239','7241','7242','7249','7251','7252','7259'=8
'7260','7271','7272','7273','7279','7281','7282','7289','7311'=8
'7312','7319','7320','7321','7322','7329','7350','7531','7532'=8
'7533','7539','7541','7542','7543','7544','7545','7546','7547'=8
'7549','7551','7559','7561','7562','7564','7569','7611','7612'=8
'7613','7614','7615','7619','7621','7622','7629','7720','7731'=8
'7732','7733','7734','7736','7739','7741','7742','7743','7744'=8
'7745','7749','7761','7762','7763','7764','7765','7769','7771'=8
'7772','7779','7781','7782','7783','7784','7785','7786','7789'=8
'7911','7912','7919','7921','7922','7929','7931','7932','7939'=8
'7941','7942','7943','7944','7949','8011','8012','8013','8019'=8
'8021','8031','8032','8039','8110','8191','8192','8193','8194'=8
'8195','8196','8199','8201','8209','8311','8312','8313','8319'=8
'8321','8322','8323','8329','8331','8332','8339','8351','8352'=8
'8353','8359','8391','8392','8393','8394','8395','8396','8397'=8
'8398','8399','8414','8415','8416','8419','8421','8422','8423'=8
'8424','8425','8426','8427','8429','8431','8432','8433','8439'=8
'8440','8461','8462','8463','8465','8466','8469','8472','8492'=8
'8499','8511','8512','8513','8514','8515','8519','8521','8522'=8
'8529','8540','8551','8552','8553','8554','8555','8559','8560'=8
'8571','8572','8573','8574','8575','8579','8591','8599','8610'=8
```

```
'8711','8713','8714','8719','8721','8722','8723','8729','8731'=8
'8733','8734','8736','8738','8739','8741','8742','8743','8749'=8
'8801','8802','8803','8804','8805','8809','8911','8912','8913'=8
'8914','8915','8916','8917','8919','8921','8922','8923','8924'=8
'8929','8931','8932','8933','8939','9211','9212','9213','9214'=8
'9216','9219','9222','9223','9224','9225','9229','9230','9240'=8
'9250','9261','9262','9269','9270','9291','9299','9311','9312'=8
'9313','9319','9411','9412','9419','9431','9432','9439','9511'=8
'9512','9513','9519','9521','9522','9529','9541','9542','9543'=8
'9549','9551','9552','9559','9591','9592','9593','9594','9595'=8
'9599','9720','9731','9732','9733','9739','9741','9742','9743'=8
'9744','9745','9746','9747','9748','9749'=8
'3701','3702','3703','3704','3709','5401','5403','5404','5405'=9
'5409','5510','5521','5522','5523','5529','5601','5602','5603'=9
'5604','5609','5892','5893','5894','5895','5899','5992','5995'=9
'5996','5997','5998','5999','7120','7291','7299','7324','7330'=9
'7340','7410','7420','7431','7432','7439','7440','7450','7491'=9
'7492','7493','7499','7512','7515','7519','7521','7522','7529'=9
'7591','7592','7711','7719','7751','7752','7753','7754','7755'=9
'7756','7759','7791','7792','7793','7799','7811','7819','7820'=9
'7830','7890','7951','7952','7953','7959','7961','7962','7963'=9
'7969','7991','7992','7999','8022','8023','8024','8029','8121'=9
'8123','8129','8341','8342','8343','8349','8464','8471','8481'=9
'8482','8483','8489','8491','8531','8532','8533','8534','8539'=9
'8940','8951','8952','8953','8959','8991','8992','8993','8999'=9
'9011','9012','9013','9014','9015','9016','9019','9021','9022'=9
'9023','9029','9101','9102','9103','9104','9109','9391','9393'=9
'9399','9421','9422','9429','9491','9493','9494','9499','9531'=9
'9532','9539','9560','9570','9611','9612','9613','9614','9615'=9
'9616','9617','9618','9619','9691','9692','9693','9694','9695'=9
'9696','9699','9711','9712','9713','9714','9715','9716','9717'=9
'9718','9719','9791','9792','9799','9810','9821','9822','9829'=9
'9831','9832','9839','9841','9842','9843','9849','9851','9852'=9
'9853','9854','9856','9859','9860','9891','9892','9899','9900'=9
'9901','9902','9903','9904','9905','9906','9907','9908','9909'=9
'9910','9911','9912','9913','9914','9915','9916','9917','9918'=9
'6211','6219','6221','6222','6229','6230','6241','6242','6243'=10
'6244','6245','6247','6248','6249','6250','6260','6271','6272'=10
'6273','6279','6281','6282','6283','6284','6289','6291','6292'=10
'6299','6311','6312','6313','6314','6315','6316','6317','6319'=10
'6321','6322','6323','6324','6325','6326','6327','6329','6411'=10
'6412','6413','6414','6415','6419','6491','6492','6493','6494'=10
'6495','6496','6497','6499'=10
.=99
other=0;
```

VAR: O_EGP	**EGP**	**1981,1986,1991,1996**
VAR: O_EGPSp	**EGP (Spouse)**	**1986**
VAR: O_EGP	**EGP 68 from NZSCO68 (but using NZSCO99)**	**2001**

Format: fEGP

```
  1='High grade professionals & administrators'
  2='Lower grade professionals & higher grade technicians'
  3='Routine non-manual employees, sales & service workers'
  4='Small proprietors & administrators with employees'
  5='Small proprietors & administrators without employees'
  6='Farmers & self-employed fishermen'        7='Lower grade technicians & foremen'
  8='Skilled manual workers'                   9='Semi & unskilled manual workers'
 10='Agricultural workers'                   .,0='Missing';
```

formats to assign SEI by three digit NZSCO90 codes

NZSCO90 used to create O_SEI91 **1991,1996**

inFormat: $i90SEI

```
'611'=22.4    '826'=22.7    '523'=22.9    '612'=25.1    '512'=26.7
'911'=27.3    '513'=29.4    '915'=29.8    '813'=29.8    '744'=30.2
'521'=32.9    '514'=33.7    '822'=33.7    '914'=34.4    '828'=35.7
'823'=36.4    '743'=36.4    '913'=36.5    '827'=37.5    '422'=37.7
'824'=37.9    '821'=38.2    '741'=38.3    '613'=38.6    '832'=38.7
'245'=38.8    '825'=39.0    '833'=39.6    '829'=39.6    '614'=39.8
'742'=40.4    '414'=40.8    '412'=42.0    '912'=42.2    '421'=43.1
'812'=43.4    '731'=44.2    '841'=44.2    '413'=44.3    '411'=44.7
'711'=45.2    '721'=45.5    '522'=45.8    '811'=46.7    '733'=48.8
'712'=48.7    '723'=48.7    '713'=49.2    '834'=49.4    '814'=49.5
'732'=49.9    '334'=50.4    '336'=50.3    '323'=51.3    '815'=51.3
'511'=52.5    '724'=53.2    '722'=53.5    '313'=53.8    '122'=54.0
'011'=54.2    '335'=54.9    '312'=55.3    '322'=55.5    '234'=56.6
'331'=56.6    '321'=58.3    '338'=58.8    '223'=60.1    '332'=60.1
'816'=60.2    '515'=61.2    '831'=61.3    '233'=61.5    '243'=61.8
'315'=62.2    '114'=62.6    '311'=63.4    '333'=64.7    '121'=65.0
'241'=70.9    '214'=73.2    '314'=73.5    '213'=74.8    '244'=75.3
'232'=76.6    '235'=77.0    '231'=77.6    '221'=79.2    '211'=81.9
'112'=82.0    '212'=82.6    '111'=83.9    '242'=88.9    '113'=89.8
'222'=90.0    '337'=10.0    other=.;
```

1996 NZSEI scores from 3 digit NZSCO95 code

NZSCO95 used to create O_SEI96 **1996**

inFormat: $i96SEI

```
'111'=63    '112'=69    '113'=90    '114'=46    '121'=69
'122'=50    '211'=68    '212'=71    '213'=60    '214'=56
'221'=58    '222'=89    '223'=45    '231'=69    '232'=61
'233'=43    '234'=45    '235'=58    '241'=61    '242'=83
'243'=44    '244'=62    '245'=32    '311'=46    '312'=47
'313'=46    '314'=65    '315'=44    '321'=45    '322'=45
'323'=33    '331'=48    '332'=51    '333'=46    '334'=29
'335'=40    '336'=49    '337'=31    '338'=42    '411'=33
'412'=34    '413'=28    '414'=30    '421'=30    '422'=27
'511'=38    '512'=18    '513'=19    '514'=20    '515'=44
'521'=22    '522'=30    '523'=64    '611'=22    '612'=34
'613'=31    '614'=37    '711'=36    '712'=32    '713'=43
'721'=32    '722'=39    '723'=34    '724'=37    '731'=34
'732'=27    '733'=35    '741'=26    '742'=28    '743'=26
'744'=20    '811'=36    '812'=27    '813'=19    '814'=30
'815'=39    '816'=48    '821'=25    '822'=23    '823'=23
'824'=26    '825'=30    '826'=10    '827'=24    '828'=24
'829'=24    '831'=46    '832'=26    '833'=27    '834'=32
'841'=29    '911'=21    '912'=32    '913'=25    '914'=19
'915'=18    other=.;
```

Used to group SEI91 into classes **1991,1996**

inFormat: i91sei

```
75 -  90=1      60 -< 75=2      50 -< 60=3      40 -< 50=4
30 -< 40=5      10 -< 30=6          other=9;
```

Variables for 1991 and 1996 currently do not have any format associated with them

VAR: O_SEI91v	**SEI 91 Values**	**1991,1996**
VAR: O_SEI91vFa	**SEI 91 Values (Father)**	**1991**
VAR: O_SEI91vMo	**SEI 91 Values (Mother)**	**1991**
VAR: O_SEI91vPr	**SEI 91 Values (Parent)**	**1991**

VAR: O_SEI91v	NZSEI 1991 value from NZSCO90 (but using NZSCO99)	2001

Note: Values in data-set are single values, not grouped

Format: f91sei

```
75 -  90='NZSEI Class 1'              60 -< 75='NZSEI Class 2'
50 -< 60='NZSEI Class 3'              40 -< 50='NZSEI Class 4'
30 -< 40='NZSEI Class 5'              10 -< 30='NZSEI Class 6'
   other='NZSEI Class 9 (Miss or NS)';
```

Used to group SEI96 into classes	1996

inFormat: i96sei

```
66-90=1        56-65=2        42-55=3        32-41=4        24-31=5
10-23=6        other=9;
```

Variable for 1996 currently does not have format f96sei. associated with it, but it could

VAR: O_SEI96v	SEI 96 Values	1996
VAR: O_SEI96v	NZSEI 1996 value from NZSCO95 (but using NZSCO99)	2001

Note: Values in data-set are single values, not grouped

Format: f96sei

```
66-90='NZSEI Class 1'                 56-65='NZSEI Class 2'
42-55='NZSEI Class 3'                 32-41='NZSEI Class 4'
24-31='NZSEI Class 5'                 10-23='NZSEI Class 6'
other='NZSEI Class 9 (Miss or NS)';
```

If SEI class variable formed for 1991 and 1996, this would be its format

VAR: O_SEI91c	NZSEI 1991 class from NZSCO90 (but using NZSCO99)	2001
VAR: O_SEI96c	NZSEI 1996 class from NZSCO95 (but using NZSCO99)	2001

Format: fnsei

```
   1='NZSEI Class 1'                    2='NZSEI Class 2'
   3='NZSEI Class 3'                  4,8='NZSEI Class 4'
   5='NZSEI Class 5'                    6='NZSEI Class 6'
   7='NZSEI Class 7 (Farmers)'         .,9='NZSEI Class 9 (Miss or NS)';
```

Farmer Flag from 4 digit NZSCO68 Used on 4 digit NZSCO68 to group into farmers and non-farmers	1981,1986,1991,1996

inFormat: $i68Frm

```
'6111','6121','6122','6129','6131','6132','6133','6134'=1
'6141','6142','6143','6144','6145','6149','6151','6152'=1
'6159','6160','6171','6172','6173','6174','6179','6191'=1
'6192','6211','6219','6221','6222','6229','6230','6241'=1
'6242','6243','6244','6245','6246','6248','6249','6250'=1
'6260','6271','6272','6273','6279','6289','6291','6292'=1
'6299','7511','7783','7789','7799','9919','0532','0662'=1
'6119','6139'=1
other=0;
```

VAR: O_FarmFlg	Farmers Occupation Flag	1981,1986,1991,1996
VAR: O_FarmFlgSp	Farmers Occupation Flag (Spouse)	1986
VAR: O_FarmFlgFa	Farmers Occupation Flag (Father)	1991

VAR: O_FarmFlgMo	**Farmers Occupation Flag (Mother)**	**1991**
VAR: O_FarmFlgPr	**Farmers Occupation Flag (Parent)**	**1991**
VAR: O_FarmFlg	**Farmer's Occupational Flag from NZSCO68 (but using NZSCO99)**	**2001**

Format: fFarmF

```
  0='Not a Farmer'              1='Farmer';
```

The format f2xOcc. can be used for O_Occ2X and O_OccSp2X (currently they do not have formats attached to them)		
VAR: O_Occ2X	**Occupation Code - 2 Digits Occ68**	**1981,1986,1991,1996**
VAR: O_OccSp2X	**Spouse Occupation Code - 2 Digits Occ68**	**1986**

Format: f2xOcc

```
 1='Physical Scientists(1)+Statisticians,Mathematicians,Systems Analysts(8)'
 2='Architects, Engineers (2)'                  3='Architects, Engineers (3)'
 4='Aircraft and Ships Officers'                5='Life Scientists'
 6='Medical, Dental, Veterinary (6)'            7='Medical, Dental, Veterinary (7)'
11='Accountants(11)+Economists(9)'             12='Jurists'
13='Teachers' 14='Workers in Religion'
15='Authors, Journalists & Related Writers'
16='Sculptors, Painters, Photographers & Related Creative'
17='Composers&Performing Artists(17)+Athletes,Sportsmen/Sportswomen(18)'
19='Professional, Technical'
21='Managers(21)+Legislative Officials&Government Administive(20)'
30='Clerical Supervisors'                      31='Government Executive Officials'
32='Stenog. Typists, Card & Tape Punching Machine Operators'
33='Bookkeepers, Cashiers(33)+Computing Machine Operators(34)'
35='Transpost & Communications Supervisors'
37='Mail Distribution Clerks(37)+Transport Conductors(36)'
38='Telephone and Telegraph Operators'         39='Clerical nec'
40='Managers (Wholesale & Retail Trade)'
41='Working Proprietor (Wholesale & Retail Trade)'
42='Sales Supervisors and Buyers'
43='Technical Salesperson, Representative & Manufacturing'
44='Insurance, Real Estate, Securities Salespersons'
45='Salespersons, Shop Assistants(45)+Sales Workers nec(49)'
50='Managers (Catering & Lodging Services)'
51='Working Proprietors (Catering & Lodging Services)'
53='Cooks, Waiters, Waitresses, Bartenders etc.'
54='House Staff&Housekeeping Services nec(54)+Housekeeping&Related Service
    Supervisors(52)'
55='Building Caretakers, Charworkers'
56='Launderers, Drycleaners & Pressers'
57='Hairdresser, Barber, Beautician etc.'
58='Protective Service Workers - Including Armed Forces'
59='Service Workers nec'                       60='Farm Managers & Supervisors'
61='Farmers'
62='Agriculture & Animal Husbandry Workers'
63='Forestry Workers'                          64='Fishermen, Hunters'
70='Production Supervisors & General Foremen/Women'
71='Mine/Quarrymen, Well-Drillers etc.'        72='Metal Processors'
73='Wood Preparation Workers & Paper Makers'   74='Chemical Processors'
75='Spinners,Weavers,Knitters(75)+Tanners,Fellmongers&Pelt Dressers(76)'
77='Food&Beverage Processors(77)+Tobacco Preparers&Tobacco Product Makers(78)'
79='Tailors etc. Upholsterers'
80='Shoemakers & Leather Goods Maker'
81='Cabinet Makers & Related Woodworkers'
83='Blacksmith,Toolmakers,Machine Tool Operators(83)+Stone Cutters&Carvers(82)'
84='Machinery Fitters, Assemblers etc. Not Electrical'
```

```
85='Electrical Fitters etc.Electronic Workers(85)+Broadcasting,Sound-Equipment
    Operators&Cinema Projectionists(86)'
87='Plumbers,Welders,Sheet & Structural Metal Preparers & Erectors'
88='Jewellery & Precious Metal Workers'         89='Glass Forgers, Potters'
90='Rubber & Plastics Product Makers'
92='Printers(92)+Paper & Paperboard Product Makers(91)'
93='Painters'                                   94='Production'
95='Bricklayers, Carpenters & Other Construction'
96='Stationary Engine & Related Equipment Operator'
97='Material, Dockets & Freight Handlers etc.'
98='Transport Equipment Operators'              99='Labourers nec'
 .='Missing';
```

VAR: O_Occ2X	Occupational Code - 2 Digits NZSCO99 V 1.0	2001

Format: f01Occ

```
11='Legislators and Administrators'             12='Corporate Managers'
21='Physical, Mathematical and Engineering Science Professionals'
22='Life Science and Health Professionals'      23='Teaching Professionals'
24='Other Professionals'
31='Physical Science and Engineering Associate Professionals'
32='Life Science and Health Associate Professionals'
33='Other Associate Professionals'              41='Office Clerks'
42='Customer Services Clerks'
51='Personal and Protective Services Workers'
52='Salespersons, Demonstrators and Models'
61='Market Oriented Agricultural and Fishery Workers'
71='Building Trades Workers'
72='Metal and Machinery Trades Workers'         73='Precision Trades Workers'
74='Other Craft and Related Trades Workers'     81='Industrial Plant Operators'
82='Stationary Machine Operators and Assemblers'
83='Drivers and Mobile Machinery Operators'     84='Building and Related Workers'
91='Labourers and Related Elementary Service Workers'
97='Response Unidentifiable'
99='Response Outside Scope/Not Stated';
```

DWELLING TYPE FORMATS

VAR: H_DwgTp	Dwelling Type (detailed)	1981

Format: f81dtyp

```
 1='Private Dwelling: Separate house (1 H/H)'
 2='Private Dwelling: House or flat attached to business premises'
 3='Private Dwelling: House (2 or more H/Hs) with shared facilities'
 4='Private Dwelling: House with other private dwellings attached'
 5='Private Dwelling: Self-contained flat or apartment'
 6='Private Dwelling: Townhouse, rowhouse, villa unit'
 7='Private Dwelling: Bach, Crib, hut (not in work camp)'
 8='Private Dwelling: Mobile or moveable home'
 9='Other private dwellings, incl. temporary'
10='Hotel, Motel, Private Hotel, Guest House'
11='Boarding or Rooming House'
12='Educational Institution (school hostel etc)'
13='Religious institution (convent, monastery)'
14='Hospital, convalescent home'
15='Home for Elderly'
16='Welfare Inst. (church hostel, night shelter)'
17='Other camp or hostel (youth or immigration)'
18='Motor camp'
19='Prison, police lock up or station'
20='Armed forces camp, vessel etc'
21='Staff quarters, nurses home etc'
```

```
  22='Seasonal group quarters (shearers etc)'
  23='Vessel (not Navy)'
  24='Communes'
  25='Other non private dwelling (fire stations etc)';
```

VAR: H_DwgTp	Dwelling Record Type	1996,2001

Format: f96dtyp

```
   1='Private Dwelling'            2='Non-Private Dwelling'
 .,9='Not Elsewhere Included';
```

VAR: H_DwgTpG	Dwelling Type	1986,1991,1996

Format: fdtyp

```
   1='Permanent/Fixed'             2='Semi-Permanent'
   3='Temporary/Mobile'            4='Hospitals'
   5='RestHome for the Elderly'    8='Other Private Dwellings'
   9='Others'                      .='Missing DwellType';
```

VAR: H_DwgTpG	Dwelling Type (Detailed)	2001

Format: f01dtpe

```
1000='Private Dwelling Not Further Defined'
1100='Permanent Private Dwelling Not Further Defined'
1111='Separate House'
1112='Two Flats/Units/Townhouses/Apartments/Houses Joined Together'
1113='>=3 Flats/Units/Townh./Apart./Houses Joined Together, in 1or2 Storey Build'
1114='>=3 Flats/Units/Townh./Apart./Houses Joined Together, in >=3 Storey Building'
1115='Flat/Unit/Townhouse/Apart. or House Joined to or Part of a Business or Shop'
1116='Bach, Crib or Other Holiday Home'
1200='Temporary Private Dwelling Not Further Defined [->1299]'
1211='Caravan, Cabin, Tent or Mobile Unit in a Motor Camp'
1212='Mobile Units Not in a Motor Camp [->1299]'
1213='Makeshift Dwelling and or Shelter [->1299]'
1214='Roofless and or Rough Sleeper [->1299]'
1299='Other Temporary Private Dwellings '
2000='Non-Private Dwelling Not Further Defined'
2100='Institution Not Further Defined [->2199]'
2111='Home for the Elderly, Retirement Home (Cared)'
2112='Public Hospital, Convalescent Home or Maternity Home, Health Camp [->2198]'
2113='Private Hospital, Convalescent Home or Maternity Home, Health Camp [->2198]'
2114='Welfare Institution (excluding Night Shelters) [->2197]'
2115='Educational Institution'
2116='Religious Institution [->2199]'
2117='Prison, Penal Institution, Police Lock-up [->2199]'
2118='Defence Establishment (includes Navy Vessels) [->2199]'
2119='Night Shelter [->2197]'
2197='Welfare Institution (Including Night Shelters)'
2198='Hospital, Convalescent Home or Maternity Home, Health Camp'
2199='Other Institutions'
2200='Other Non-Private Dwelling Not Further Defined [->2299]'
2211='Hotel, Motel, or Guest House'
2212='Residential and or Community Care Facilities'
2213='Boarding House'
2214='Motor Camp'
2215='Work Camp, Construction Camp, Training Camp [->2299]'
2216='Yth Camp,Sch Camp,Scout/Guide Camp(inc Yth or Immig. Hostel,Trampers Hut)'
2217='Staff Quarters, Nurses Home (including Seasonal Group Quarters) [->2299]'
2218='Vessel (except Navy Vessel)'
2219='Commune [->2299]'
2220='Marae  [->2299]'
2299='Other Non-Private Dwellings';
```

NATURE OF OCCUPANCY FORMATS

VAR: H_NOccy	Nature of Occupancy	1981,1986

Format: f81Occ

```
  1='Owned with Mortgage'                              2='Owned without Mortgage'
  3='Rented/Leased from Priv. Person/Comp.-Furnished'
  4='Rented/Leased from Priv. Person/Comp.-Unfurnished'
  5='Rented/Leased from Priv. Person/Comp.-Furnishing Not Spec.'
  6='Rented/Leased from Housing Corp.'
  7='Rented/Leased from Other Govt Depts'
  8='Rented/Leased from Local Authority'
  9='Rented/Leased from Landlord Not Spec.'
 10='Provided Rent Free'                             .,99='Tenure Not Specified';
```

VAR: H_NOccy	Nature of Occupancy	1991

Format: f91Occ

```
  0='Owned with Mortgage'                              1='Owned without Mortgage'
  2='Provided Rent Free'
  3='Private Person (rented or leased)'
  4='Real Estate Agency (rented or leased)'
  5='Housing Corporation (rented or leased)'
  6='Other Govenment Departments (rented or leased)'
  7='Local Authority (rented or leased)'
  8='Landlord Not Specified (rented or leased)'       .,9='Tenure Not Specified';
```

VAR: H_NOccy	Nature of Occupancy	1996

Format: f96Occ

```
  1='Owned with Mortgage'                              2='Owned without Mortgage'
  3='Owned, Mortgage not specified'                    4='Provided Rent Free'
  5='Private Person (rented or leased)'
  7='Housing New Zealand (rented or leased)'
  8='Other Central Govenment Agency (rented or leased)'
  6='Local Authority or City Council (rented or leased)'
  9='Business, Real Estate Agency or other organisation (rented or leased)'
 10='Landlord Not Specified (rented or leased)'
 11='Not Owned, Rental status not specified'         .,99='Tenure Not Specified';
```

VAR: H_NOccy	Nature of Occupancy (Sector of Landlord)	2001

Format: f01Lld

```
 11='Private Person'                                  12='Private Trust'
 21='Local Authority or City Council'                 31='Housing New Zealand'
 32='Other State-Owned Corporation/SOE/Govt Dept/Ministry'
 41='Business or Other Organisation'                  44='Don''t Know'
 99='Not Stated';
```

TENURE FORMAT

VAR: H_Tenure	Tenure	1996,2001

Format: f96Tenr

```
  1,11='Owned with Mortgage'          2,12='Owned without Mortgage'
  3,10='Owned, Mortgage Not Specified' 4,22='Provided Rent Free'
  5,21='Rented'                       6,20='Not Owned, Rental Status Not Specified'
 .,9,99,77='Not Specified';
```

HOUSEHOLD TYPE FORMAT

VAR: H_Type	Household Type	1981

Format: f81HHT

```
 10='1F(C)-Husband & wife only (no absentees)'
 11='1F(C)-Husband & wife+unmarr. children (no absentees)'
 12='1F(C)-Husband & wife only (no children absent, other person(s) absent)'
 13='1F(C)-Husband & wife+unmarr. children (no children absent, other person(s)
    absent)'
 20='1F(I)-Husband & wife only (>=1 children absent)'
 21='1F(I)-Husband & wife+unmarr. children (1 or more children absent)'
 22='1F(I)-Husband & wife only (>=1 children absent & other person(s) absent)'
 23='1F(I)-Husband & wife+unmarr. children (>=1 children absent & other person(s)
    absent)'
 24='1F(I)-One parent+unmarr. children (spouse temp. absent)'
 25='1F(I)-One parent+unmarr. children (no absentees)'
 26='1F(I)-One parent+unmarr. children (>=1 children and spouse temp. absent)'
 27='1F(I)-One parent+unmarr. children (>=1 children absent, spouse perm. absent)'
 28='1F(I)-One parent+unmarr. children (>=1 children, spouse & other persons temp.
    absent)'
 29='1F(I)-One parent+unmarr. children (>=1 children & other persons temp. absent,
    spouse perm. absent)'
 30='1F(I)-One parent+unmarr. children (no children absent, spouse & other persons
    temp. absent)'
 31='1F(I)-One parent+unmarr. children (no children absent, other persons temp.
    absent, spouse perm. absent)'
 40='1F+OP-Husband & wife+other person(s) (w/wo absentees)'
 41='1F+OP-Husband & wife, unmarr. children + other person(s) (w/wo absentees)'
 42='1F+OP-One parent, unmarr. children + other person(s) related to parent (w/wo
    children & oth.pers. absent, spouse temp. absent)'
 43='1F+OP-One parent, unmarr. children + other person(s) related to parent (w/wo
    children & oth.pers. absent, spouse perm. absent)'
 44='1F+OP-One parent, unmarr. children + other person(s) not related to parent
    (w/wo children & oth.pers. absent, spouse temp. absent)'
 45='1F+OP-One parent, unmarr. children + other person(s) not related to parent
    (w/wo children & oth.pers. absent, spouse perm. absent)'
 46='1F+OP-One parent, unmarr. children + other person(s) related & not related to
    parent (w/wo children & oth.pers. absent, spouse temp. absent)'
 47='1F+OP-One parent, unmarr. children + other person(s) related & not related to
    parent (w/wo children & oth.pers. absent, spouse perm. absent)'
 50='2F-1stFam:Hus&wife w/wo unmarr. children (no abs);2ndFam:Hus&wife w/wo unmarr.
    children (no abs)'
 51='2F-1stFam:Hus&wife w/wo unmarr. children (no abs);2ndFam:One parent+unmarr.
    children (no abs)'
 52='2F-1stFam:One parent+unmarr. children (no abs);2ndFam:Hus&wife w/wo unmarr.
    children (no abs)'
 53='2F-1stFam:One parent+unmarr. children (no abs);2ndFam:One parent+unmarr.
    children (no abs)'
 54='2F-Two familes (with absentees)'
 55='2F-Two families+other person(s) (w/wo absentees)'
 60='3F-Three or more families, w/wo other person(s) (no absentees)'
 61='3F-Three or more families, w/wo other person(s) (with absentees)'
 70='NF-Relatives only'
 71='NF-Persons not related'
 72='NF-Related and non-related persons'
 80='1P-Usually a one-person household (no absentees)'
 81='1P-One-person household (related person(s) temp. absent)'
 82='1P-One-person household (non-related person(s) temp. absent)'
 83='1P-One-person household (related & non-related persons temp. absent)'
 84='Not elsewhere classified'
  .='Missing';
```

USUAL HOUSEHOLD COMPOSITION FORMATS

VAR: H_UsHHC	Usual Household Composition	1981

Format: f81UHC

```
  1='Couples Only'                                  2='Couples with Children'
  3='One Parent Family'                             4='Couples Only plus Others'
  5='Couples with Children plus Others'             6='One Parent Family plus Others'
  7='Two 2 Parent Families with or without Children'
  8='Two Parent plus One Parent Family'             9='Two 1 Parent Families'
 10='Three or More Families'                       11='Non-Family Households'
 12='One-Person Households'
 13='Not Elsewhere Classified. i.e. Visitors only'
.,99='Missing or Not Applicable';
```

VAR: H_UsHHC | **Usual Household Composition** | **1986,1996**

Format: fhhc

```
  1='HH with children with Sole Parent'    2='HH with children not Sole Parent'
  3='Sole Person Household'                9='Other Groupings';
```

VAR: H_UsHHC | **Usual Household Composition** | **2001**

Format: f01hhc

```
111='Couple Only'
120='Couple Only and Other Person(s) nfd'
121='Couple Only and Other Person(s), Some or All Related'
122='Couple Only and Other Person(s), All Unrelated'
131='Couple With Child(ren)'
140='Couple With Child(ren) and Other Person(s) nfd'
141='Couple With Child(ren) and Other Person(s), Some or All Related'
142='Couple With Child(ren) and Other Person(s), All Unrelated'
151='One Parent With Child(ren)'
160='One Parent With Child(ren) & Other Person(s) nfd'
161='One Par. With Child(ren) & Other Person(s), Some or All Related'
162='One Parent With Child(ren) & Other Person(s), All Unrelated'
219='Other 2-Parent Families'
210='Two 2-Parent Families nfd (Rel. betwn Fam Nuc Unknown) [->219]'
211='Two Related 2-Parent Families [->219]'
212='Two Unrelated 2-Parent Families [->219]'
220='One 2-Par.Fam & a 1-Par. Fam. nfd (Rel. bet. Fam Nuc Unknwn)[->229]'
221='One 2-Parent Family Related to a 1-Parent Family [->229]'
222='One 2-Parent Family Unrelated to a 1-Parent Family [->229]'
229='Other 2-Parent Families with other 1-Parent Families'
230='Two 1-Parent Families nfd (Rel. betwn Fam Nuc Unknown)[->239]'
231='Two Related 1-Parent Families [->239]'
232='Two Unrelated 1-Parent Families [->239]'
239='Two 1-Parent Families'
241='Other 2-Family Household'
311='Three- or More Family Household (With or Without Other People)'
400='Other Multiperson Household nfd [->429]'
411='Household of Related People [->429]'
421='Household of Related and Unrelated People [->429]'
429='Other Multiperson Households nfd'
431='Household of Unrelated People'
511='One-Person Household'
611='Household Composition Unidentifiable';
```

MARITAL STATUS FORMATS

VAR: MarSt | **Marital Status** | **1981**

Format: f81Marr

```
  1='Never Married'                 2='Married'
  3='Separated'                     4='Widowed'
  5='Divorced'                      9='Not Specified'
  .='Missing or Not Applicable';
```

VAR: MarSt	Marital Status	1986,1991

Format: f86Marr

```
  1='Never Married'                  2='Married, First Time'
  3='Remarried'                      4='Separated'
  5='Divorced'                       6='Widowed'
  9='Not Specified'                 .,8='Missing or Not Applicable';
```

VAR: MarSt_L	Marital Status (Legal)	1996,2001

Format: f96MarL

```
    111='Married (not separated)-First Marriage'
    121='Married (not separated)-Subsequent Marriage'
 131,21='Married (not separated)-Not Further Classifiable'
 211,11='Never Married'                          221,31='Separated'
 222,32='Divorced'                               223,33='Widowed'
     77='Response Unidentifiable'               .,911,99='Not Specified';
```

VAR: MarSt_S	Marital Status (Social)	1996

Format: f96MarS

```
 111='Partnered, Legal Spouse (not separated)-First Marriage'
 112='Partnered, Legal Spouse (not separated)-Subsequent Marriage'
 113='Partnered, Legal Spouse (not separated)-Not Further Classifiable'
 121='Partnered, De Facto Spouse-Opposite-sex Couple'
 122='Partnered, De Facto Spouse-Same-sex Couple'
 131='Partnered, Not Further Classifiable'       211='Non-partnered, Never Married'
 221='Non-partnered, Separated'                  222='Non-partnered, Divorced'
 223='Non-partnered, Widowed'                   .,911='Not Specified';
```

VAR: MarSt_S	Marital Status (Social)	2001

Format: f01MarS

```
 100='Partnered, nfd'                111='Legal Spouse'
 121='Other Partnership'             200='Non-partnered, nfd'
 211='Non-partnered, Never Married'  221='Non-partnered, Separated'
 222='Non-partnered, Divorced'       223='Non-partnered, Widowed'
 999='Not Stated';
```

Generated Marital Status Variables

Format: f4Marr

```
 1='Never Married'                  2,8='Current Married'
 3='Separated & Divorced'             4='Widowed'
 5='Sep, Divorced & Widowed'       .,9='N/A & Missing';
```

inFormat: i481mar (for 1981)

```
1=1                  2=2            3,5=3        4=4           9,.=.;
```

inFormat: i486mar (for 1986 and 1991)

```
1=1                  2,3=2          4,5=3        6=4         8,9,.=.;
```

inFormat: i496mar (for 1996 and 2001)

```
211,11=1   111,121,131,21=2   221,222,31,32=3   223,33=4   .,911,99,77=.;
```

CHILD DEPENDENCY FORMAT

VAR: ChildDep	Child Dependency Status Indicator	1996,2001

Format: fChdDep

```
  1='Dependent Child'                    2='Adult Child'
```

```
3,9='Child Dependency Status Unknown'          .='Not in the Subject Population';
```

VAR: H_NChn	Number of Children aged 0-15 in H/H	2001

Format: fDepCh

```
  0='No Dependent Children'                  1='One Dependent Child'
  2='Two Dependent Children'                 3='Three Dependent Children'
  4='Four Dependent Children'                5='Five Dependent Children'
  6='Six Dependent Children'                 7='Seven Dependent Children'
  8='Eight Dependent Children'               9='Nine Dependent Children'
 10='Ten Dependent Children'                11='Eleven Dependent Children'
 12='Twelve Dependent Children'             13='Thirteen Dependent Children'
 14='Fourteen Dependent Children'           15='Fifteen or More Dependent Children'
 19='Number of Dependent Children Unknown';
```

FAMILY FORMATS

VAR: FamCode	Family Code	1981,1986

Format: fFamC

```
  0='Parent (1st Family)'                    1='Child (1st Family)'
  2='Parent (2nd Family)'                    3='Child (2nd Family)'
  4='Parent (3rd Family)'                    5='Child (3rd Family)'
  6='Member (Other Families)'                7='Non Family Person'
  8='Person Alone'                           9='Guest or Visitor'
.,99='Not Applicable';
```

VAR: FamType	Family Type	1991

Format: f91FamT

```
  1='One Parent Family with Dependent Children Only'
  2='One Parent Family with Dependent & Adult Children'
  3='One Parent Family with Adult Children Only'
  4='Two Parent Family with Dependent Children Only (Youngest <= 0-4 Yrs)'
  5='Two Parent Family with Dependent Children Only (Youngest <= 5-12 Yrs'
  6='Two Parent Family with Dependent Children Only (Youngest <= 13-15 Yrs'
  7='Two Parent Family with Dependent Children Only (Youngest <= 16-18 Yrs)'
  8='Two Parent Family with Dependent & Adult Children (Youngest <= 0-4 Yrs)'
  9='Two Parent Family with Dependent & Adult Children (Youngest <= 5-12 Yrs)'
 10='Two Parent Family with Dependent & Adult Children (Youngest <= 13-15 Yrs)'
 11='Two Parent Family with Dependent & Adult Children (Youngest <= 16-18 Yrs)'
 12='Two Parent Family with Adult Children Only'
 13='Couple Only with Wife Aged 0-29 Years'
 14='Couple Only with Wife Aged 30-44 Years'
 15='Couple Only with Wife Aged 45-59 Years'
 16='Couple Only with Wife Aged >=60 Years'
 17='Non Family Unit'
 18='Unknown Coding Value'
  .='Missing';
```

VAR: FamType	Family Type	1996

Format: f96FamT

```
 11='Couple without children'
 21='Couple with dependent children only'
 22='Couple with dependent and adult children'
 23='Couple with adult children only'
 29='Couple with children, dependency status not classifiable'
 31='One parent family with dependent children only'
 32='One parent family with dependent and adult children'
 33='One parent family with adult children only'
 39='One parent family with children, dependency status not classifiable'
 91='Family type not classifiable'
```

```
.='Missing';
```

VAR: FamType	Family Type	2001

Format: f01FamT

```
  0='Guest or Visitor'                    1='First Family Nucleus'
  2='Second Family Nucleus'               3='Third Family Nucleus'
  4='Fourth Family Nucleus'               5='Fifth Family Nucleus'
  6='Sixth Family Nucleus'                7='Seventh Family Nucleus'
  8='Eighth Family Nucleus'               9='Ninth Family Nucleus'
 10='Not in a Nucleus, But Related to a Nucleus'
 20='Related Group of People in No Nucleus Household'
 30='Living Alone'
 40='Not Related' /*(to a Nucleus, if One is Present, or Anyone Else if No Nucleus
                     Present)*/
 50='Unable to Code';
```

VAR: H_PerFam	Number of People in Family	2001

Format: f01PerF

```
  2='Two People'                          3='Three People'
  4='Four People'                         5='Five People'
  6='Six People'                         88='More than Six People';
```

BABY BORN FORMAT

VAR: BabyBrn	Number of Live Babies Given Birth To	1996

Format: fBBrn

```
  0='No Children'            1='1 Child'                2='2 Children'
  3='3 Children'             4='4 Children'             5='5 Children'
  6='6 Children'             7='7 Children'             8='8 Children'
  9='9 Children'            10='10 or More Children'   88='Unidentifiable'
 98='Object to Answering'   99='Not Specified';
```

CHILD DEPENDENCY FORMAT

VAR: ChildDep	Child Dependency Status Indicator	1996,2001

Format: fChdDep

```
  1='Dependent Child'                  2='Adult Child'
3,9='Child Dependency Status Unknown'  .='Not in the Subject Population';
```

VAR: H_NChn	Number of Children aged 0-15 in H/H	2001

Format: fDepCh

```
  0='No Dependent Children'            1='One Dependent Child'
  2='Two Dependent Children'           3='Three Dependent Children'
  4='Four Dependent Children'          5='Five Dependent Children'
  6='Six Dependent Children'           7='Seven Dependent Children'
  8='Eight Dependent Children'         9='Nine Dependent Children'
 10='Ten Dependent Children'          11='Eleven Dependent Children'
 12='Twelve Dependent Children'       13='Thirteen Dependent Children'
 14='Fourteen Dependent Children'     15='Fifteen or More Dependent Children'
 19='Number of Dependent Children Unknown';
```

GEOGRAPHICAL VARIABLES

Area Health Board 1989

VAR: IG_AHB	Area Health Board 1989	1981,1986,1991,1996,2001

Format: f89AHB

```
  1='Northland'              2='Auckland'               3='Waikato'
  4='Bay of Plenty'          5='Tairawhiti'             6='Hawke''s Bay'
```

```
 7='Taranaki'              8='Manawatu/Wanganui'      9='Wellington'
10='Nelson/Marlborough'   12='West Coast'           13='Canterbury'
14='Otago'                15='Southland'            88='Overseas'
99='Not Applicable'        .='Missing';
```

Area Health Districts 1993 based on 1995 TLAs

VAR: G_AHD | **Area Health District 1993** | **1981,1986,1996,2001**

Format: f93AHD

```
 1='Northland'             2='North West Auckland'    3='Central Auckland'
 4='South Auckland'        5='Eastern Bay of Plenty'  6='Rotorua'
 7='Taupo'                 8='Tauranga'               9='Gisborne'
10='Taranaki'             11='Waikato'               12='Ruapehu'
13='Wanganui'             14='Manawatu'              15='Hawke''s Bay'
16='Wairarapa'            17='Hutt'                  18='Wellington'
19='Nelson-Marlborough'   20='West Coast'           21='Canterbury'
22='South Canterbury'     23='Otago'                 24='Southland'
.,99='Not Applicable';
```

VAR: G_AHD | **Area Health District 1993** | **1991**

VAR: G_AHBD91 | **Usual Residence Area Health Board Consituent District** | **1991**

Format: f91AHD

```
101='Maungataniwha'                          102='Bay of Islands'
103='Kaipara'                                104='Whangarei Rural'
105='Whangarei Urban'                        198='Northland, not further defined'
201='Rodney/North Shore'                     202='Waitakere'
203='Auckland'                               204='Manukau'
205='Papakura/Franklin'                      298='Auckland, not further defined'
301='Thames-Coromandel'                      302='North Waikato'
303='Waihou'                                 304='Hamilton West'
305='Hamilton East'                          306='Northern King Country'
307='Waipa'                                  308='South Waikato'
309='Taupo'                                  398='Waikato, not further defined'
401='Western Bay of Plenty'                  402='Tauranga'
403='Rotorua'                                404='Eastern Bay of Plenty'
498='Bay of Plenty, not further defined'
501='Waiapu'                                 502='Cook'
503='Gisborne'                               598='Tairawhiti, not further defined'
601='Wairoa'                                 602='Ngaruroro'
603='Napier'                                 604='Hastings'
605='Central Hawke''s Bay'                   698='Hawke''s Bay, not further defined'
701='North Taranaki'                         702='New Plymouth'
703='Stratford'                              704='South Taranaki'
798='Taranaki, not further defined'
801='Wanganui'                               802='Rangitikei'
803='Manawatu'                               804='Palmerston North'
805='Tararua'                                806='Horowhenua'
898='Manawatu/Wanganui, not further defined'
901='Kapiti Coast'                           902='Porirua'
903='Upper Hutt'                             904='Lower Hutt'
905='Wellington North'                       906='Wellington South'
907='Wairarapa'                              998='Wellington, not further defined'
1001='Tasman'                               1002='Nelson'
1003='Marlborough'                          1098='Marlborough, not further defined'
1201='Buller'                               1202='Grey'
1203='Westland'                             1298='West Coast, not further defined'
1301='North Canterbury'                     1302='Fitzgerald'
1303='Godley'                               1304='Ashburton'
1305='South Canterbury/Waitaki'             1398='Canterbury, not further defined'
1401='Dunstan'                              1402='Moeraki'
```

```
1403='Molyneux'                          1404='Cargill'
1405='Wickcliffe'                        1498='Otago, not further defined'
1501='Te Anau'                           1502='Hokonui'
1503='Gore'                              1504='Waikiwi'
1505='Awarua'                            1506='Dome'
1598='Southland, not further defined'
.,9696,9898,9999='Not Applicable or Not Specified';
```

VAR: G_DHB	District Health Board	2001

Format: f01DHB

```
  1='Northland'                    2='Waitemata'
  3='Auckland'                     4='Counties Manukau'
  5='Waikato'                      6='Lakes'
  7='Bay of Plenty'                8='Tairawhiti'
  9='Taranaki'                    10='Hawke''s Bay'
 11='Whanganui'                   12='Midcentral'
 13='Hutt'                        14='Capital and Coast'
 15='Wairarapa'                   16='Nelson Marlborough'
 17='West Coast'                  18='Canterbury'
 19='South Canterbury'            20='Otago'
 21='Southland'
 99='Area outside District Health Board';
```

VAR: G_RC	Regional Council	2001

Format: fRegCo

```
  1='Northland Region'             2='Auckland Region'
  3='Waikato Region'               4='Bay of Plenty Region'
  5='Gisborne Region'              6='Hawke''s Bay Region'
  7='Taranaki Region'              8='Manawatu-Wanganui Region'
  9='Wellington Region'           12='West Coast Region'
 13='Canterbury Region'           14='Otago Region'
 15='Southland Region'            16='Tasman Region'
 17='Nelson Region'               18='Marlborough Region'
 99='Area Outside Region';
```

VAR: G_RHA	Regional Health Authority (1989 AHB)	1981,1986,1991,1996,2001

Format: frha

```
  1='Northern'      2='Midland'
  3='Central'       4='Southern'      .,9='Not Applicable';
```

VAR: G_Rurality	Rurality Indicator	1981,1986,1991,1996

Format: frural

```
  1='Urban'         2='Minor Urban'      3='Rural & Other';
```

VAR: G_Rurality	Rurality Indicator	2001

Format: f6Rur

```
  1='Main Urban Area'              2='Secondary Urban Area'
  3='Minor Urban Area'             4='Rural Centre'
  5='Other Rural'                  6='Other';
```

VAR: G_TLA5yr	TLA 1995 Address 5 Years Ago	1996,2001
VAR: G_TLA89	Territorial Local Authority 1989	1991
VAR: G_TLA95	Territorial Local Authority 1995	1981,1986,1996,2001

Format: f95tla

```
  1='Far North'                    2='Whangarei'
```

```
 3='Kaipara'                      4='Rodney'
 5='North Shore'                  6='Waitakere'
 7='Auckland'                     8='Manukau'
 9='Papakura'                    10='Franklin'
11='Thames Coromandel'           12='Hauraki'
13='Waikato'                     15='Matamata-Piako'
16='Hamilton'                    17='Waipa'
18='Otorohanga'                  19='South Waikato'
20='Waitomo'                     21='Taupo'
22='Western Bay of Plenty'       23='Tauranga'
24='Rotorua'                     25='Whakatane'
26='Kawerau'                     27='Opotiki'
28='Gisborne'                    29='Wairoa'
30='Hastings'                    31='Napier'
32='Central Hawkes Bay'          33='New Plymouth'
34='Stratford'                   35='South Taranaki'
36='Ruapehu'                     37='Wanganui'
38='Rangitikei'                  39='Manawatu'
40='Palmerston North'            41='Tararua'
42='Horowhenua'                  43='Kapiti Coast'
44='Porirua'                     45='Upper Hutt'
46='Lower Hutt'                  47='Wellington'
48='Masterton'                   49='Carterton'
50='South Wairarapa'             51='Tasman'
52='Nelson'                      53='Marlborough'
54='Kaikoura'                    55='Buller'
56='Grey'                        57='Westland'
58='Hurunui'                     59='Waimakariri'
60='Christchurch'                61='Banks Peninsula'
62='Selwyn'                      63='Ashburton'
64='Timaru'                      65='Mackenzie'
66='Waimate'                     67='Chatham Islands'
68='Waitaki'                     69='Central Otago'
70='Queenstown-Lakes'            71='Dunedin'
72='Clutha'                      73='Southland'
74='Gore'                        75='Invercargill'
888='Overseas'                 901-998='Other Groupings (N/A)'
999='TLA Not Applicable'               .='Missing';
```

VAR: G_UA91 | **Usual Residence Urban Area 1991** | **1991**

Format: f91UA

```
 1='Whangarei'                    2='Northern Auckland Zone'
 3='Western Auckland Zone'        4='Central Auckland Zone'
 5='Southern Auckland Zone'       6='Hamilton Zone'
46='Cambridge Zone'              47='Te Awamutu Zone'
 7='Tauranga'                     8='Rotorua'
 9='Gisborne'                    10='Napier'
11='Hastings'                    12='New Plymouth'
13='Wanganui'                    14='Palmerston North'
15='Upper Hutt Zone'             16='Lower Hutt Zone'
17='Porirua Basin Zone'          18='Wellington City Zone'
19='Nelson'                      20='Christchurch'
22='Dunedin'                     23='Invercargill'
24='Pukekohe'                    25='Tokoroa'
26='Taupo'                       27='Whakatane'
28='Hawera'                      29='Feilding'
30='Levin'                       31='Kapiti'
32='Masterton'                   33='Blenheim'
34='Greymouth'                   35='Ashburton'
21='Timaru'                      36='Oamaru'
37='Gore'                        38='Minor Urban Areas'
```

```
  39='Shipping'                    40,41='Rural Areas'
42-45='Oceanic/Inlet'                96='No Fixed Abode'
.,98,99='Not Specified N.Z.';
```

VAR: G_UA96 | **Usual Residence Urban Area 1996** | **1981,1986,1996**

Format: f96UA

```
   1='Whangarei'                     2='Northern Auckland Zone'
   3='Western Auckland Zone'         4='Central Auckland Zone'
   5='Southern Auckland Zone'        6='Hamilton Zone'
   7='Cambridge Zone'                8='Te Awamutu Zone'
   9='Tauranga'                     10='Rotorua'
  11='Gisborne'                     12='Napier Zone'
  13='Hastings Zone'                14='New Plymouth'
  15='Wanganui'                     16='Palmerston North'
  17='Upper Hutt Zone'              18='Lower Hutt Zone'
  19='Porirua Zone'                 20='Wellington Zone'
  21='Nelson'                       22='Christchurch'
  23='Dunedin'                      24='Invercargill'
 101='Pukekohe'                    102='Tokoroa'
 103='Taupo'                       104='Whakatane'
 105='Hawera'                      106='Feilding'
 107='Levin'                       108='Kapiti'
 109='Masterton'                   110='Blenheim'
 111='Greymouth'                   112='Ashburton'
 113='Timaru'                      114='Oamaru'
 115='Gore'                        201='Taipa Bay-Mangonui'
 202='Kaitaia'                     203='Kerikeri'
 204='Russell'                     205='Paihia'
 206='Kawakawa'                    207='Moerewa'
 208='Kaikohe'                     209='Dargaville'
 210='Wellsford'                   211='Warkworth'
 212='Snells Beach'                213='Helensville'
 214='Waiheke Island'              215='Waiuku'
 216='Raglan'                      217='Huntly'
 218='Otorohanga'                  219='Te Kuiti'
 220='Taumarunui'                  221='Whitianga'
 222='Coromandel'                  223='Whangamata'
 224='Tairua'                      225='Pauanui Beach'
 226='Thames'                      227='Waihi Beach'
 228='Paeroa'                      229='Waihi'
 230='Te Aroha'                    231='Morrinsville'
 232='Matamata'                    233='Putaruru'
 234='Katikati Community'          235='Te Puke Community'
 236='Mangakino'                   237='Turangi'
 238='Edgecumbe Community'         239='Kawerau'
 240='Murupara'                    241='Opotiki'
 242='Wairoa'                      243='Waipawa'
 244='Waipukurau'                  245='Dannevirke'
 246='Woodville'                   247='Waitara'
 248='Inglewood'                   249='Stratford'
 250='Opunake'                     251='Eltham'
 252='Manaia'                      253='Patea'
 254='Ohakune'                     255='Raetihi'
 256='Waiouru'                     257='Bulls'
 258='Taihape'                     259='Marton'
 260='Foxton Community'            261='Shannon'
 262='Otaki'                       263='Pahiatua'
 264='Carterton'                   265='Greytown'
 266='Featherston'                 267='Martinborough'
 268='Picton'                      269='Kaikoura'
 270='Takaka'                      271='Brightwater'
```

```
272='Wakefield'                          273='Motueka'
274='Westport'                           275='Reefton'
276='Hokitika'                           277='Hanmer Springs'
278='Woodend'                            279='Rangiora'
280='Oxford'                             281='Darfield'
282='Lincoln'                            283='Leeston'
284='Pleasant Point'                     285='Geraldine'
286='Temuka'                             287='Twizel Community'
288='Waimate'                            289='Milton'
290='Balclutha'                          291='Alexandra'
292='Cromwell'                           293='Wanaka'
294='Arrowtown'                          295='Queenstown'
296='Winton'                             297='Bluff'
298='Te Anau'                            299='Riverton'
501='Rural Centre'                       502='Rural (Incl. Some Off-Shore Islands)'
505='Inland Water Not in Urban Area'     506='Inlet-Not in TLA'
507='Inlet-In TLA but Not in Urban Area' 510='Oceanic-In Region But Not in TLA'
511='Oceanic-Outside Region'             888='Overseas'
.,999='Urban Area Not Applicable';
```

VAR: G_URProfile	Usual Residence Profile	2001

Format: FUrPro

```
  1='Main Urban Area'                    2='Satellite Urban Community'
  3='Independent Urban Community'        4='Rural Highly Urban Influence'
  5='Rural Moderate Urban Influence'     6='Predominantly Rural'
  7='Highly Rural/Remote'                9='Not Included';
```

NEW ZEALAND DEPRIVATION FORMATS

VAR: NZDep91	NZ Deprivation 1991 scale	1991
VAR: NZDep96	NZ Deprivation 1996 scale	1981,1986,1996
VAR: NZDep2001	NZ Deprivation 2001 scale	2001

Format: fdeps

```
  1='Dep 1'          2='Dep 2'          3='Dep 3'          4='Dep 4'
  5='Dep 5'          6='Dep 6'          7='Dep 7'          8='Dep 8'
  9='Dep 9'         10='Dep10'        0,.='Miss Dep';
```

VAR: NZDep91sc	NZ Deprivation 1991 score (rounded)	1991
VAR: NZDep96sc	NZ Deprivation 1996 score (rounded)	1981,1986,1996

Note: Values in data-set are single values, not grouped

Format: ftdep

```
       0='0 dep'                    830- 899=' 830- 899 dep'
 900- 999=' 900- 999 dep'          1000-1099='1000-1099 dep'
1100-1199='1100-1199 dep'          1200-1299='1200-1299 dep'
1300-1399='1300-1399 dep'          1400-1499='1400-1499 dep'
1500-1519='1500-1519 dep'               1520='1520 dep'
     1530='1530 dep'                       .='Missing dep';
```

VAR: NZDepFour	NZ Deprivation 1991 scale (4 groups)	1991
VAR: NZDepFour	NZ Deprivation 1996 scale (4 groups)	1981,1986,1996

Format: fdep4g

```
  1='Dep 1-4'          2='Dep 5-6'          3='Dep 7-8'
  4='Dep 9-10'       0,.='Miss Dep';
```

GENERIC DECILE FORMAT

Neighbourhood (or Social) Fragmentation Index

VAR: SocFrag01	2001 full socfrag decile	2001

Format: fdec

```
1='Decile 1'     2='Decile 2'     3='Decile 4'     4='Decile 4'     5='Decile 5'
6='Decile 6'     7='Decile 7'     8='Decile 8'     9='Decile 9'    10='Decile 10';
```

SOCIAL CAPITAL FORMATS

Used to create SocCap01 **1996**

inFormat: iSocN

```
-7.05 -< -2.05 =-450              -2.05 -< -1.65 =-185
-1.65 -< -1.45 =-155              -1.45 -< -1.35 =-140
-1.35 -< -1.25 =-130              -1.25 -< -1.15 =-120
-1.15 -< -1.05 =-110              -1.05 -< -0.95 =-100
-0.95 -< -0.85 = -90              -0.85 -< -0.75 = -80
-0.75 -< -0.65 = -70              -0.65 -< -0.55 = -60
-0.55 -< -0.45 = -50              -0.45 -< -0.35 = -40
-0.35 -< -0.25 = -30              -0.25 -< -0.15 = -20
-0.15 -< -0.05 = -10              -0.05 -<  0.05 =   0
 0.05 -<  0.15 =  10               0.15 -<  0.25 =  20
 0.25 -<  0.35 =  30               0.35 -<  0.45 =  40
 0.45 -<  0.55 =  50               0.55 -<  0.65 =  60
 0.65 -<  0.75 =  70               0.75 -<  0.85 =  80
 0.85 -<  0.95 =  90               0.95 -<  1.05 = 100
 1.05 -<  1.15 = 110               1.15 -<  1.25 = 120
 1.25 -<  1.35 = 130               1.35 -<  1.45 = 140
 1.45 -<  1.65 = 155               1.65 -<  2.05 = 185
 2.05 -   7.05 = 450;
```

VAR: SocCap01 **Social Capital Index (0.1 steps)** **1996**

Format: f01Soc

```
-450='-7.05 -< -2.05'             -185='-2.05 -< -1.65'
-155='-1.65 -< -1.45'             -140='-1.45 -< -1.35'
-130='-1.35 -< -1.25'             -120='-1.25 -< -1.15'
-110='-1.15 -< -1.05'             -100='-1.05 -< -0.95'
 -90='-0.95 -< -0.85'              -80='-0.85 -< -0.75'
 -70='-0.75 -< -0.65'              -60='-0.65 -< -0.55'
 -50='-0.55 -< -0.45'              -40='-0.45 -< -0.35'
 -30='-0.35 -< -0.25'              -20='-0.25 -< -0.15'
 -10='-0.15 -< -0.05'                0='-0.05 -<  0.05'
  10=' 0.05 -<  0.15'               20=' 0.15 -<  0.25'
  30=' 0.25 -<  0.35'               40=' 0.35 -<  0.45'
  50=' 0.45 -<  0.55'               60=' 0.55 -<  0.65'
  70=' 0.65 -<  0.75'               80=' 0.75 -<  0.85'
  90=' 0.85 -<  0.95'              100=' 0.95 -<  1.05'
 110=' 1.05 -<  1.15'              120=' 1.15 -<  1.25'
 130=' 1.25 -<  1.35'              140=' 1.35 -<  1.45'
 155=' 1.45 -<  1.65'              185=' 1.65 -<  2.05'
 450=' 2.05 -   7.05';
```

Social Capital in 40 almost equal groupings (using RANK)

Used to create SocCap40 **1996**

inFormat: iSocC

```
-4.000   -< -1.715  = 1           -1.715   -< -1.450  = 2
-1.450   -< -1.3195 = 3           -1.3195  -< -1.200  = 4
-1.200   -< -1.08977= 5           -1.08977 -< -0.973  = 6
-0.973   -< -0.908  = 7           -0.908   -< -0.8334 = 8
-0.8334  -< -0.770  = 9           -0.770   -< -0.697  =10
-0.697   -< -0.5965 =11           -0.5965  -< -0.526  =12
-0.526   -< -0.460  =13           -0.460   -< -0.40283=14
-0.40283 -< -0.337  =15           -0.337   -< -0.283  =16
```

```
-0.283   -< -0.2156 =17          -0.2156  -< -0.1605 =18
-0.1605  -< -0.10838=19          -0.10838 -< -0.0594 =20
-0.0594  -<  0.009  =21           0.009   -<  0.050  =22
 0.050   -<  0.1011 =23           0.1011  -<  0.162  =24
 0.162   -<  0.234  =25           0.234   -<  0.281  =26
 0.281   -<  0.34585=27           0.34585 -<  0.4142 =28
 0.4142  -<  0.5008 =29           0.5008  -<  0.599  =30
 0.599   -<  0.701  =31           0.701   -<  0.785  =32
 0.785   -<  0.857  =33           0.857   -<  0.9613 =34
 0.9613  -<  1.109  =35           1.109   -<  1.250  =36
 1.250   -<  1.45   =37           1.45    -<  1.7459 =38
 1.7459  -<  2.099  =39           2.099   -<  6.9    =40
 other=.;
```

VAR: SocCap40	Social Capital Index (40 groups)	1996

Format: f40Soc

```
 1='Soc Cap Group  1'          2='Soc Cap Group  2'          3='Soc Cap Group  3'
 4='Soc Cap Group  4'          5='Soc Cap Group  5'          6='Soc Cap Group  6'
 7='Soc Cap Group  7'          8='Soc Cap Group  8'          9='Soc Cap Group  9'
10='Soc Cap Group 10'         11='Soc Cap Group 11'         12='Soc Cap Group 12'
13='Soc Cap Group 13'         14='Soc Cap Group 14'         15='Soc Cap Group 15'
16='Soc Cap Group 16'         17='Soc Cap Group 17'         18='Soc Cap Group 18'
19='Soc Cap Group 19'         20='Soc Cap Group 20'         21='Soc Cap Group 21'
22='Soc Cap Group 22'         23='Soc Cap Group 23'         24='Soc Cap Group 24'
25='Soc Cap Group 25'         26='Soc Cap Group 26'         27='Soc Cap Group 27'
28='Soc Cap Group 28'         29='Soc Cap Group 29'         30='Soc Cap Group 30'
31='Soc Cap Group 31'         32='Soc Cap Group 32'         33='Soc Cap Group 33'
34='Soc Cap Group 34'         35='Soc Cap Group 35'         36='Soc Cap Group 36'
37='Soc Cap Group 37'         38='Soc Cap Group 38'         39='Soc Cap Group 39'
40='Soc Cap Group 40'          .='Missing Soc Cap';
```

USUAL RESIDENCE FORMATS

VAR: UsInd	Usual Residence Indicator	1981

Format: f81USI

```
  0='Different from Census Night Address'     1='Same as Census Night Address'
  2='Different from CN but Meshblock Same'    .='Not Applicable';
```

VAR: UsInd	Usual Residence Indicator	1986,1991,1996
VAR: UsInd91	Usual Residence Indicator 1991	1991

1986 has code 3=No fixed abode, 4=Overseas, but only has the values 1,2,3,.
1991 has code 3=Overseas, 4=No fixed abode, but only has the values 1,2,4,5,.
therefore labelled this way at present

Format: fUSI

```
  1='Same as Census Night Address'          2='Elsewhere in New Zealand'
3,4='No Fixed Abode'                        5='Not Specified (within NZ)'
  6='Assume Same as Census Night'           8='Assume Not Usual Residence'
  .='Not Applicable';
```

VAR: UsInd	Usual Residence Indicator	2001

Format: f01USI

```
  1='Same as Census Night Address'          2='Elsewhere in New Zealand'
  3='Overseas'                              4='No Fixed Abode';
```

VAR: YrsUR	Years at Usual Residence	1986

Note: Values in data-set are single values, not grouped

Format: f86YUR

```
    0='Less than 1 year'                    1='One Year'
 2- 4=' 2- 4 Years'                      5- 9=' 5- 9 Years'
10-19='10-19 Years'                     20-29='20-29 Years'
30-39='30-39 Years'                     40-49='40-49 Years'
50-59='50-59 Years'                     60-69='60-69 Years'
70-79='70-79 Years'                        97='80 Years or More'
   99='Not Specified'                     .='Not Applicable';
```

VAR: YrsUR	Years at Usual Residence	1991

Note: Values in data-set are single values, not grouped

Format: f91YUR

```
    0='Less than 1 year'                    1='  One Year'
 2- 4=' 2- 4 Years'                      5- 9=' 5- 9 Years'
10-19='10-19 Years'                     20-29='20-29 Years'
30-39='30-39 Years'                     40-49='40-49 Years'
50-59='50-59 Years'                     60-69='60-69 Years'
70-79='70-79 Years'                     80-89='80-89 Years'
90-96='90-96 Years'                        97='97 Years or More'
   98='Not Specified (5 years or more)'    99='Not Specified'
    .='Not Applicable';
```

VAR: YrsUR	Years at Usual Residence	1996

Note: Values in data-set are single values, not grouped

Format: f96YUR

```
    0='Less than 1 year'                    1='  One Year'
 2- 4=' 2- 4 Years'                      5- 9=' 5- 9 Years'
10-19='10-19 Years'                     20-29='20-29 Years'
30-39='30-39 Years'                     40-49='40-49 Years'
50-59='50-59 Years'                     60-69='60-69 Years'
70-79='70-79 Years'                     80-89='80-89 Years'
90-96='90-96 Years'                        97='97 Years or More'
   98='Unidentifiable'                     99='Not Specified'
    .='Not Applicable';
```

Used on SNZ supplied variable to form YrsUR	2001

inFormat: iYrsUR

```
  '00'=00                 '01'=01                 '02'=02                 '03'=03
  '04'=04                 '05'=05                 '06'=06                 '07'=07
  '08'=08                 '09'=09                 '10'=10
  'more than 10 years'=15                         'NA'=.;
```

VAR: YrsUR	Years at Usual Residence	2001

Format: fYrsUR

```
   0='Less than 1 year'      1='One Year'           2='2 Years'
   3='3 Years'               4='4 Years'            5='5 Years'
   6='6 Years'               7='7 Years'            8='8 Years'
   9='9 Years'              10='10 Years'          15='More than 10 Years'
   .='NA';
```

SAME AREA UNIT FORMATS

VAR: AU1Yr	Same Area Unit of Residence 1 Year Ago	1981

Format: fYesNo

```
   0='No'       1='Yes'       .='Missing';
```

VAR: AU5Yr	Area Unit 5 years ago indicator	1996,2001

Format: fAU5yr

```
1='Same Area Unit as 5 years ago'        0='Different Area Unit than 5 years ago';
```

YEARS IN NEW ZEALAND FORMATS

Used on SNZ supplied variable to form YrsInNZ — **1996,2001**

inFormat: iYrsNZ

```
'00'   =00          '01'   =01          '02'   =02          '03'   =03
'04'   =04          '05'   =05          '06'   =06          '07'   =07
'08'   =08          '09'   =09          '10'   =10          '11-15'=13
'16-20'=18          '21-25'=23          '26-30'=28          '31-35'=33
'36-40'=38          '41-45'=43          '46-50'=48          '51-55'=53
'56-60'=58          '61-65'=63          '66-70'=68          '71-75'=73
'76-80'=78          '81-85'=83          '86-90'=88          '91-95'=93
'96 years or more'=98                      'NA'=.;
```

VAR: YrsInNZ — **Years since Arrival in NZ** — **1996,2001**

Format: fYrsNZ

```
 0='00'              1='01'              2='02'              3='03'
 4='04'              5='05'              6='06'              7='07'
 8='08'              9='09'             10='10'             13='11-15'
18='16-20'          23='21-25'          28='26-30'          33='31-35'
38='36-40'          43='41-45'          48='46-50'          53='51-55'
58='56-60'          63='61-65'          68='66-70'          73='71-75'
78='76-80'          83='81-85'          88='86-90'          93='91-95'
98='96 years or more'                 .='NA (Born in NZ)';
```

GENERAL NUMBER COUNT FORMATS

VAR: H_Mveh — **Number of Motor Vehicles in H/H** — **1996,2001**

Format: f3num

```
 0='Nil'             1='1'                  2='2'
 3='3 or more'      .,9='Not Specified';
```

VAR: H_Mveh — **Number of Private Cars in H/H** — **1986**
VAR: H_Mveh — **Number of Motor Vehicles in H/H** — **1991**
VAR: H_NAbTot — **Total Number of Absentees in H/H** — **1996**

Format: f5num

```
 0='Nil'             1='1'                  2='2'
 3='3'               4='4'                  5='5 or more'
.,9,99='Not Specified';
```

VAR: H_IncNum — **Number Diff Sources Support Service Income for H/H excl ACC&Super** — **2001**

Format: f6num

```
 0='No Source of Income Support'        1='One Source'
 2='Two Sources'                        3='Three Sources'
 4='Four Sources'                       5='Five Sources'
 6='6 or more'                       .,8,9='Not Specified'
99='All Income Sources Not Stated';
```

VAR: H_FtJob — **Number of Full-time Jobs in H/H** — **1986**

Format: f7num

```
 0='Nil'             1='1'                  2='2'
 3='3'               4='4'                  5='5'
 6='6'               7='7 or more'       .,8,9='Not Specified';
```

VAR: H_PtJob — **Number of Part-time Jobs in H/H** — **1986**

Format: f7gnum

```
  0='Nil'              1='1'                2='2'
  3='3 or 4'           5='5'                6='6'
  7='7 or more'     .,8,9='Not Specified';
```

VAR: H_BCars	**Number of Business Cars in H/H**	**1981**
VAR: H_Bdrms	**Number of Bedrooms**	**1986,1991**
VAR: H_Mveh	**Number of Private Cars in H/H**	**1981**
VAR: H_NAdult	**Number of Adults aged 20+ in H/H (on C/N)**	**1981**
VAR: H_NAdult	**Number of Adults aged 16+ in H/H (on C/N)**	**1986**
VAR: H_NChn	**Number of Children aged 0-15 in H/H (on C/N)**	**1981,1986**
VAR: H_PBike	**Number of Pushbikes in H/H**	**1981**

Format: f8num

```
  0='Nil'              1='1'                2='2'
  3='3'                4='4'                5='5'
  6='6'                7='7'                8='8 or more'
 .,9='Not Specified';
```

Generated format for Car Access from H_Mveh All Years

Format: fcar

```
  0='Nil Cars'         1='1 Car'            2='>=2 Cars'
.,9='Missing';
```

VAR: H_NAbCh	**Number of Children Absent in H/H**	**1981**
VAR: H_NAbTot	**Total Number of Absentees in H/H**	**1981**

Format: f9num

```
  0='Nil'              1='1'                2='2'
  3='3'                4='4'                5='5'
  6='6'                7='7'                8='8'
  9='9 or more'        .='Not Applicable';
```

VAR: H_Bdrms	**Number of Bedrooms**	**1996,2001**

Format: f14num

```
  1='1'                2='2'                3='3'
  4='4'                5='5'                6='6'
  7='7'                8='8'                9='9'
 10='10'              11='11'              12='12'
 13='13'              14='14 or more'      98,77='Unidentifiable'
.,99='Not Specified';
```

VAR: H_Bdrms	**Number of Bedrooms**	**1981**
VAR: H_PerFam	**Number of People in Family**	**1996**

Format: f20num

```
  1='1'                2='2'                3='3'
  4='4'                5='5'                6='6'
  7='7'                8='8'                9='9'
 10='10'              11='11'              12='12'
 13='13'              14='14'              15='15'
 16='16'              17='17'              18='18'
 19='19'              20='20 or more'    .,99='Not Specified';
```

VAR: H_OccTot	**Total Number of Occupants in H/H**	**1996**

Note: Values in data-set are single numbers, not grouped

Format: f500nm

```
  1- 49='  1- 49'              50- 99=' 50- 99'
100-199='100-199'             200-299='200-299'
300-399='300-399'             400-499='400-499'
500-998='500 or more'           .,999='Missing';
```

TELEPHONE FORMATS

VAR: H_Teleph | **Telephone in Dwelling** | **1996**

Format: fTele

```
  1='Yes-Have Telephone'          2='No -No Telephone'
  3='Unidentified'               .,9='Not Specified';
```

VAR: H_Teleph | **Telephone in Dwelling** | **2001**

Format: f01Tele

```
  0='No Access to Telecommunications Systems'
  1='Access to Telephone'
  9='No or Not Stated';
```

IMPUTATION FIELD FORMATS

VAR: Imp | **Imputation Indicator** | **1991**

Format: f91IImp

```
  0='None'                              1='Age'
  2='Sex'                               3='Total Hours Worked'
  4='Sex & Age'                         5='Sex & Total Hours Worked'
  6='Age & Total Hours Worked'          7='Sex, Age & Total Hours Worked'
  .='Not Applicable';
```

VAR: ImpAge | **Age Imputation Indicator** | **1991**

Format: f91IAge

```
  1='Absentee Age Imputation Code 1'    2='Absentee Age Imputation Code 2'
  .='Not Applicable';
```

VAR: ImpAge | **Age Imputation Indicator** | **1996**

Format: f96IAge

```
 .,0='No Imputation'                    1='Imputed from Family'
  2='No Information'                    3='From Dwelling Form'
  4='Conflicting Information'           5='Unknown Code 5'
  6='Unknown Code 6'                    7='Unknown Code 7'
  8='Unknown Code 8'                    9='Unknown Code 9'
 10='Unknown Code G'                   11='Unknown Code X';
```

VAR: ImpForm | **Form Imputated Indicator (Dummy Form)** | **1996**

Format: f96IDum

```
  .='Record Present'                    1='Dummy Record Code 1'
  2='Dummy Record Code 2';
```

VAR: ImpForm | **Form Imputated Indicator (Dummy Form)** | **2001**

Format: f01IDum

```
  0='Non-Dummy Individual Form'         1='Dummy IF from Dummy Household'
  2='Dummy IF from incomplete household';
```

VAR: ImpLFS | **Imputation in Labour Force Status** | **1996**

Format: f96ILFS

```
  .='No Imputation'                     1='Any Value Imputed'
```

```
  2='Full or Part Time Imputed'          3='Unemployed or Not in Labour Force';
```

VAR: ImpMonth	Age in Months Imputation Indicator	1981,1986,1991,1996

Format: fIMth

```
  0='No Imputation'                      1='Age in Months Imputed';
```

VAR: ImpMonth	Month of Birth imputed	2001

Format: fImpMth

```
  0='No Imputation of Months'            1='Month Imputed'
 10='Age in yrs and Age in Month incompatible. Months adjusted'
 11='Month Imputed but incompatible with age in years. Months adjusted';
```

VAR: ImpRes	Imputation in Usual Residence Status	1996

Format: f96IRes

```
  1='Possibly Area Unit Known'           2='Possibly TLA Known'
  3='Regional Council Known'             4='Possibly No Information'
  .='No Imputation';
```

VAR: ImpSex	Imputation in Sex	1996

Format: f96ISex

```
.,0='No Imputation Done'                 1='Imputed from Name or Relationship'
  2='Stochastic Imputation';
```

RELIGION FORMATS

VAR: Religion	Religion - Main Groups	1981
VAR: Religion	Religion - Treat Groups With Caution	1986,1996

Format: f81relg

```
  1='Anglican Church'                     2='Presbyterian Church of New Zealand'
  3='Roman Catholic'                      4='Methodist'
  5='Christian N.O.D.'                    6='Baptist'
  7='Church of Jesus Christ of Latter Day Saints'
  8='Ratana Establishment Church of New Zealand'
  9='Protestant N.O.D.'                  10='Brethren'
 11='Salvation Army'                     12='Jehovah''s Witness'
 13='Seventh Day Adventist'              96='Other Religions'
 97='No Religion'                        98='Object'
 99='Not Specified';
```

Used to group religion variable to be consistent with 1981	1986

Note: At the time of creating these variables, SNZ were looking at groupings to use over time. The groupings for these years may not reflect SNZ's new thinking about groupings to be used over time.

inFormat: i86rlg

```
  1= 1       2= 2       3= 3       4= 4       17= 5       5= 6
 96= 7      97= 8       9= 9      10=10       11=11      12=12
 13=13       6=97       8=98   94,999,.=99   other=96;
```

Used to group religion variable to be consistent with 1981	1996

Note: At the time of creating these variables, SNZ were looking at groupings to use over time. The groupings for these years may not reflect SNZ's new thinking about groupings to be used over time.

inFormat: $i96rlg

```
'2031'= 1     '2271'= 2     '2090'= 3     '2201'= 4     '2100'= 5
'2050'= 6     '2171'= 7     '2141'= 8     '2290'= 9     '2070'=10
```

```
'2311'=11      '2151'=12      '2012'=13      '7599'=96      '8051'=97
'8091'=98      '8071','8111','9999',.=99      other=96;
```

VAR: Religion	Religion - Main Groups (Level 1) Note: This is the first religion stated on form	2001

Format: f01relg

```
  0='No Religion'                    1='Buddhist'
  2='Christian'                      3='Hindu'
  4='Islam/Muslim'                   5='Judaism/Jewish'
  6='Māori Christian'                7='Spiritualism and New Age Religions'
  8='Other Religions'                9='Residual Categories';
```

SMOKING FORMATS

VAR: SmkCur	Current Smoking Status	1981

Format: fSmkC

```
  0='Never Smoked Cigarettes'        1='Used to Smoke'
  2='Currently Smoking Regularly'   .,9='Not Specified';
```

VAR: SmkEver	Ever Smoked	1996

Format: fSmkE

```
  1='Yes - Smoked'                   2='No - Never Smoked'
  3='Inidentifiable'                .,9='Not Specified';
```

VAR: SmkQnt	Quantity of Cigarettes Smoked in a day (23/3/81)	1981

Format: fSmkQ

```
    0='Nil, but otherwise smoked regularly'     1- 4=' 1- 4 Cigarettes'
 5- 9=' 5- 9 Cigarettes'                          10='   10 Cigarettes'
11-14='11-14 Cigarettes'                        15-19='15-19 Cigarettes'
   20='   20 Cigarettes'                        21-24='21-24 Cigarettes'
25-29='25-29 Cigarettes'                           30='   30 Cigarettes'
31-34='31-34 Cigarettes'                        35-39='35-39 Cigarettes'
   40='   40 Cigarettes'                        41-44='41-44 Cigarettes'
45-49='45-49 Cigarettes'                           50='   50 Cigarettes'
51-54='51-54 Cigarettes'                        55-59='55-59 Cigarettes'
   60='   60 Cigarettes'                        61-64='61-64 Cigarettes'
65-69='65-69 Cigarettes'                           70='   70 Cigarettes'
71-74='71-74 Cigarettes'                        75-79='75-79 Cigarettes'
   80='   80 Cigarettes'                        81-84='81-84 Cigarettes'
85-89='85-89 Cigarettes'                           90='   90 Cigarettes'
91-94='91-94 Cigarettes'                        95-96='95-96 Cigarettes'
  97='97 or more Cigarettes'                       98='Not Applicable'
.,99='Not Specified';
```

VAR: SmkReg	Smoking Regularly	1996

Format: fSmkR

```
  1='Smoking Regularly'              2='Not Smoking Regularly'
  3='Unidentifiable'                 9='Not Specified';
```

VAR: SmkStat	Smoking Status	1996

Format: fSmkS

```
  1='Smoker'                         2='Ex-Smoker'
  3='Never Smoked Regularly'         4='Unidentifiable'
 .,9='Not Specified';
```

WORKING AT HOME FORMAT

VAR: WrkatHome | **Work at Home Indicator** | **2001**

Format: f01WkHm

```
  1='Worked at Home'                2='Worked Away from Home'
  9='Not Stated';
```

YEAR OF COHORT FORMAT

VAR: CenYear | **Year of Census** | **1981,1986,1991,1996,2001**

Note: Format not currently associated with variable (except for 2001) but can be used if required

Format: fcyear

```
  -1='All Years'
1981='1981-84'     1986='1986-89'     1991='1991-94'     1996='1996-99'
2001='2001-04';
```

Dates of each Census for CenYear

inFormat: icend

```
1981='24Mar1981'd       1986='04Mar1986'd       1991='05Mar1991'd
1996='05Mar1996'd       2001='06Mar2001'd       2006='07Mar2006'd;
```

LINKING OF MORTALITY RECORDS FORMAT

VAR: Link | **Matched** | **1981,1986,1991,1996,2001**

Format: flink

```
  0='Not Linked'          1='Linked';
```

DISEASE FORMATS

aggregated icd codes: using GBD study and Martin's aggregation and US Study (1998)
Changed ...99 to ...XX because of 1981 and 1986 ICD codes
Used on ICDA to form ICD_Gp | **1981,1986,1991,1996**

inFormat: $iicd

```
' '                                  = '   '
'001'-'139XX','320'-'323XX','390'-'392XX'= '001'   /*communicable diseases*/
'460'-'466XX','590'-'590XX','595'-'595XX'= '001'
'614'-'616XX','680'-'686XX','711'-'711XX'= '001'
'771'-'771XX'                        = '001'
'140'-'152XX','155'-'161XX','163'-'173XX'= '140'   /*other cancer         */
'175'-'184XX','186'-'209XX'          = '140'
'153'-'154XX'                        = '153'   /*colorectal Ca        */
'162'-'162XX'                        = '162'   /*lung/bronchus Ca     */
'174'-'174XX'                        = '174'   /*breast Ca (female)   */
'185'-'185XX'                        = '185'   /*prostate Ca          */
'250'-'250XX'                        = '250'   /*diabetes             */
'393'-'399XX','402'-'402XX'          = '390'   /*other heart disease  */
'404'-'409XX','415'-'429XX'          = '390'
'400'-'401XX','403'-'403XX','440'-'459XX'= '400'   /*other cardiovascular disease*/
'410'-'414XX'                        = '410'   /*IHD                  */
'430'-'438XX'                        = '430'   /*cerebrovascular disease*/
'470'-'478XX','494'-'494XX','497'-'519XX'= '470'   /*other respiratory    */
'480'-'487XX'                        = '480'   /*Pnuemonia/influenza -
                           may want to sometimes group with communicable diseases*/
'490'-'492XX','495'-'496XX'          = '490'   /*COPD                 */
'493'-'493XX'                        = '493'   /*Asthma               */
'740'-'759XX'                        = '740'   /*Congenital           */
'760'-'770XX','772'-'779XX'          = '760'   /*Perinatal            */
'798'-'79809'                        = '798'   /*SIDS                 */
```

```
'800'-'809XX','826'-'949XX'             = '800'   /*unintentional injury
                                                    other than RTC */
'810'-'825XX'                           = '810'   /*RTC                  */
'950'-'959XX','980'-'989XX'             = '950'   /*suicide              */
'960'-'979XX','990'-'999XX'             = '960'   /*violent              */
                                  other = '999';
```

VAR: ICD_Gp | **International Cause of Death (ICD)** | **1981,1986,1991,1996**

Format: $ficd

```
'001'='Communicable Diseases'          '153'='Colorectal Cancer'
'162'='Lung/Bronchus Cancer'           '174'='Breast Cancer'
'185'='Prostate Cancer'                '140'='Other Cancer'
'250'='Diabetes'                       '410'='IHD'
'390'='Other Heart Disease'            '430'='Cerebrovascular Disease'
'400'='Other Cardiovascular Disease'   '480'='Pnuemonia/Influenza'
'490'='COPD'                           '493'='Asthma'
'470'='Other Respiratory'              '740'='Congenital'
'760'='Perinatal'                      '798'='SIDS'
'810'='RTC'                            '950'='Suicide'
'960'='Violent'                        '800'='Unintentional Injury other than RTC'
'999'='Other Causes'                   '   '='Not Dead/Linked';
```

Used to create VARIABLE: ICDCan DESCRIPTION: ICD Cancer Details

inFormat: $ixicd

```
'151'-'151XX'='151'           '157'-'157XX'='157'
'172'-'172XX'='172'           '191'-'192XX'='191'
other='XXX';
```

VAR: ICDCan | **ICD Cancer Details** | **1981,1986,1991,1996**

Format: $fxicd

```
'151'='Stomach Ca'             '157'='Pancreas Ca'
'172'='Melanoma'               '191'='Brain/Nervous System Ca'
'XXX'='Everything Else';
```

Used on ICDA to form ICD_Gp (now incorporates other cancer breakdowns) | **1981,1986,1991,1996**

inFormat: $inicd

```
' '                                    = '   '
'001'-'139XX','320'-'323XX','390'-'392XX'= '001'   /*communicable diseases*/
'460'-'466XX','590'-'590XX','595'-'595XX'= '001'
'614'-'616XX','680'-'686XX','711'-'711XX'= '001'
'771'-'771XX'                          = '001'
'140'-'149XX','152'-'152XX','155'-'156XX'= '140'   /*other cancer         */
'158'-'161XX','163'-'171XX','173'-'173XX'= '140'   /*other cancer         */
'175'-'184XX','186'-'190XX','192'-'209XX'= '140'   /*other cancer         */
'153'-'154XX'                          = '153'   /*colorectal Ca        */
'162'-'162XX'                          = '162'   /*lung/bronchus Ca     */
'174'-'174XX'                          = '174'   /*breast Ca (female)   */
'185'-'185XX'                          = '185'   /*prostate Ca          */
'151'-'151XX'                          = '151'   /*stomach Ca           */
'157'-'157XX'                          = '157'   /*pancreas Ca          */
'172'-'172XX'                          = '172'   /*melanoma Ca          */
'191'-'191XX'                          = '191'   /*brain/nervous system Ca */
'250'-'250XX'                          = '250'   /*diabetes             */
'393'-'399XX','402'-'402XX'            = '390'   /*other heart disease  */
'404'-'409XX','415'-'429XX'            = '390'
'400'-'401XX','403'-'403XX','440'-'459XX'= '400'   /*other cardiovascular disease*/
'410'-'414XX'                          = '410'   /*IHD                  */
```

```
 '430'-'438XX'                          = '430'   /*cerebrovascular disease*/
 '470'-'478XX','494'-'494XX','497'-'519XX'= '470'   /*other respiratory    */
 '480'-'487XX'                          = '480'   /*Pnuemonia/influenza -
                            may want to sometimes group with communicable diseases*/
 '490'-'492XX','495'-'496XX'            = '490'   /*COPD                 */
 '493'-'493XX'                          = '493'   /*Asthma               */
 '740'-'759XX'                          = '740'   /*Congenital           */
 '760'-'770XX','772'-'779XX'            = '760'   /*Perinatal            */
 '798'-'79809'                          = '798'   /*SIDS                 */
 '800'-'809XX','826'-'949XX'            = '800'   /*unintentional injury
                                                    other than RTC */
 '810'-'825XX'                          = '810'   /*RTC                  */
 '950'-'959XX','980'-'989XX'            = '950'   /*suicide              */
 '960'-'979XX','990'-'999XX'            = '960'   /*violent              */
                                  other = '999';
```

Should now be used for all ICD_Gp variables once the ICDCan details have been combined

VAR: ICD_Gp International Cause of Death (ICD) 1981,1986,1991,1996,2001

Format: $fnicd

```
/*Major Group : Cancers*/
 '151'='Stomach Cancer'             /*Prev in Other Cancers & in a separate variable*/
 '153'='Colorectal Cancer'
 '157'='Pancreas Cancer'            /*Prev in Other Cancers & in a separate variable*/
 '162'='Lung/Bronchus Cancer'
 '172'='Melanoma'                   /*Prev in Other Cancers & in a separate variable*/
 '174'='Breast Cancer'
 '185'='Prostate Cancer'
 '191'='Brain/Nervous System Cancer'/*Prev in Other Cancers & in a separate variable*/
 '140'='Other Cancer'
/*Major Group : CVD*/
 '410'='IHD'                         '390'='Other Heart Disease'
 '430'='Cerebrovascular Disease'     '400'='Other Cardiovascular Disease'
/*Major Group : Injury inc Suicide & Intentional*/
 '810'='RTC'                         '800'='Unintentional Injury other than RTC'
 '950'='Suicide'                     '960'='Violent'
/*Major Group : Other Causes*/
 '001'='Communicable Diseases'       '250'='Diabetes'
 '480'='Pnuemonia/Influenza'         '490'='COPD'
 '493'='Asthma'                      '470'='Other Respiratory'
 '740'='Congenital'                  '760'='Perinatal'
 '798'='SIDS'                        '999'='Other Causes'
/*Major Group : Not Dead or Not Linked*/
 '   '='Not Dead/Linked';
```

Breakdown further analysis for Causes of interest : InFormat

Used on ICD10 to form ICD_Dt 2001

inFormat: $iicddt

```
'C180','C182','C183','C184','C185','C186','C187','C188','C189','C19'='1531'
'C20'='1532'
'I500','I501','I509'='3901'
'I200','I201','I208','I209','I210','I211','I212','I213','I214','I219','I220',
'I221','I228','I229','I248','I249'='4101'
'I2510','I2511','I2512','I252','I255','I256','I258','I259'='4102'
'W01','W06','W18','W19','W05','W07','W08','W03','W10','W11'='8001'
'V406','V425','V426','V430','V434','V435','V436','V445','V446','V455','V456',
'V470','V475','V476','V480','V481','V482','V485','V486','V487'='8103'
'X60'-'X69','Y11','Y12','Y13','Y14','Y16','Y17','Y18','Y19'='9501'
'X70','Y20'='9502'
'X71','Y21','X72','X73','X74'-'X74X','Y244','Y249','X80','Y30'='9503'
```

```
'X76','X78','X81','X82','X83','X84','Y26','Y28','Y31','Y32','Y33','Y34','Y870'='9509'
'I7100'-'I7103','I711'-'I716','I178','I719'='4001'
'F010','F011','F013','F018','F019','F03'='9991'
'G20'='9992'
'G300','G301','G308','G309'='9993'
'N170','N179','N180','N188','N1890','N1891','N19'='9994'
other='9999';
```

Breakdown further analysis for Causes of Death of interest Can use this format for grouped or detailed Causes of Death		
VAR: ICD_Dt	**ICD Cause of Death Further Details**	**2001**
VAR: ICD_Gp	**Underlying Cause of Death**	**2001**

Format: $ficddt

```
/*Major Group : Cancers*/
 '151'='Stomach Cancer'   /*>=25*/  /*Prev in Other Cancers & in a separate variable*/
 '153'='Colorectal Cancer'     /*>=25*/
    '1531'='Colon Cancer'      /*>=25*/
    '1532'='Rectum Cancer'     /*>=25*/
 '157'='Pancreas Cancer'  /*>=25*/  /*Prev in Other Cancers & in a separate variable*/
 '162'='Lung/Bronchus Cancer'  /*>=25*/
 '172'='Melanoma'         /*>=25*/  /*Prev in Other Cancers & in a separate variable*/
 '174'='Breast Cancer'         /*Females only and >=25*/
 '185'='Prostate Cancer'       /*Males only and >=45*/
 '191'='Brain/Nervous System Cancer'/*Prev in Other Cancers & in a separate variable*/
 '140'='Other Cancer'
/*Major Group : CVD*/
 '410'='IHD'                                /*>=25*/
    '4101'='IHD-Acute myocardial infarction'  /*>=25*/
    '4102'='IHD-Chronic'                      /*>=25*/
 '390'='Other Heart Disease'
    '3901'='Heart Failure'                    /*>=65*/
 '430'='Cerebrovascular Disease'              /*>=25*/
 '400'='Other Cardiovascular Disease'
    '4001'='CVD-Aortic aneurysm'              /*>=45*/
/*Major Group : Injury inc Suicide & Intentional*/
 '810'='RTC'
    '8103'='Car RTC'
 '800'='Unintentional Injury other than RTC'
    '8001'='Falls'                            /*>=45*/
 '950'='Suicide'
    '9501'='Suicide-Poisonings'               /*>=15 and <=85*/
    '9502'='Suicide-Hangings etc'             /*<=85*/
    '9503'='Suicide-Drown,firearms,jump'      /*>=15*/
    '9509'='Other Methods of Suicide'         /*Males only and >=15*/
 '960'='Violent'                              /*<=65*/
/*Major Group : Other Causes*/
 '001'='Communicable Diseases'
 '250'='Diabetes'                             /*>=25*/
 '480'='Pnuemonia/Influenza'                  /*>=45*/
 '490'='COPD'                                 /*>=25*/
 '493'='Asthma'                               /*>=25*/
 '470'='Other Respiratory'                    /*>=25*/
 '740'='Congenital'
 '760'='Perinatal'                            /*<=15*/
 '798'='SIDS'                                 /*<=15*/
 '999'='Other Causes'
    '9991'='Dementia'                         /*>=65*/
    '9992'="Parkinson's Disease"              /*>=65*/
    '9993'="Alzheimer's Disease"              /*>=65*/
    '9994'='Renal Failure'                    /*>=65*/
```

```
 /*Remainder of Four Character details*/
  'XXX','XXXX','9999'='Everything Else'
/*Major Group : Not Dead or Not Linked*/
 '   '='Not Dead/Linked';
```

Used to create VAR: AnyAv | **Avoidable Mortality Flag (First Version)** | **1981,1986,1991,1996**

Note: Interim Avoidable mortality flag 26/8/2003
This is the version of the variable in the datalab.

inFormat: iavmrt

```
 '010'-'018XX',  '137'-'137XX', '090'-'099XX', '6140'-'6145X','6147'-'6169X',
 '633'-'633XX',  '042'-'042XX', '001'-'009XX', '382'-'383XX', '460'-'466XX',
 '480'-'480XX',  '486'-'486XX', '487'-'487XX', '032'-'033XX', '037'-'037XX',
 '045'-'045XX',  '055'-'056XX', '7710'-'7710X','7713'-'7713X','070'-'070XX',
 '034'-'036XX',  '038'-'038XX', '084'-'084XX', '320'-'320XX', '322'-'322XX',
 '481'-'481XX',  '482'-'482XX', '485'-'485XX', '681'-'681XX', '682'-'682XX',
 '730'-'730XX',  '630'-'632XX', '634'-'676XX', '764'-'765XX', '7707'-'7707X',
 '767'-'768XX',  '7701'-'7701X','7720'-'7720X','7723'-'7723X','243'-'243XX',
 '2552'-'2552X', '2701'-'2701X','2711'-'2711X','766'-'766XX', '769'-'769XX',
 '7702'-'7706X', '7708'-'7709X','7721'-'7722X','7724'-'7729X','773'-'779XX',
 '740'-'759XX',  '7980'-'7980X','280'-'281XX', '250'-'250XX', '240'-'242XX',
 '244'-'244XX',  '2550'-'2550X','2554'-'2554X','201'-'201XX', '140'-'149XX',
 '191'-'191XX',  '192'-'192XX', '150'-'150XX', '151'-'151XX', '153'-'153XX',
 '154'-'154XX',  '155'-'155XX', '162'-'162XX', '172'-'172XX', '173'-'173XX',
 '174'-'174XX',  '180'-'180XX', '182'-'182XX', '179'-'179XX', '183'-'183XX',
 '185'-'185XX',  '186'-'186XX', '188'-'188XX', '189'-'189XX', '193'-'193XX',
 '200'-'200XX',  '202'-'202XX', '204'-'204XX', '345'-'345XX', '332'-'332XX',
 '290'-'290XX',  '3310'-'3310X','292'-'292XX', '304'-'304XX', '3052'-'3059X',
 '410'-'414XX',  '430'-'438XX', '390'-'398XX', '420'-'422XX', '4249'-'4249X',
 '402'-'402XX',  '441'-'441XX', '493'-'493XX', '490'-'492XX', '496'-'496XX',
 '444'-'444XX',  '531'-'534XX', '571'-'571XX', '577'-'577XX', '574'-'576XX',
 '540'-'543XX',  '555'-'555XX', '556'-'556XX', '558'-'558XX', '870'-'879XX',
 '810'-'819XX',  '910'-'910XX', '850'-'869XX', '880'-'883XX', '88410'-'8844X',
 '88460'-'885XX','888'-'888XX', '890'-'899XX', '8840'-'8840X','8845'-'8845X',
 '8860'-'8860X', '9170'-'9170X','927'-'927XX', '950'-'959XX', '980'-'989XX',
 '960'-'969XX',  '991'-'999XX', '190'-'190XX', '210'-'234XX', '291'-'291XX',
 '303'-'303XX',  '3050'-'3050X','4255'-'4255X','5353'-'5353X','580'-'589XX',
 '403'-'403XX',  '592'-'592XX', '5937'-'5937X','594'-'594XX', '598'-'598XX',
 '5996'-'5996X','600'-'600XX'=1
/*Plus grouping this small group as avoidable for confidentiality reasons*/
 '483X','4838','4952','4959','7608','970X','97008','97009'=1
other=0;
```

Used to create VAR: AvMort | **Avoidable Mortality Flag** | **2001**

Note: New version of Avoidable mortality flag for ICD10 codes
Produced from Avoid Mortality final list of codes 20 May 2004.xls
Originally called i10avmrt. but needed to rename it for SAS 8.2 to i10av.

inFormat: i10av

```
'B20'-'B24XX',     /*HIV/AIDS*/
'B15'-'B19XX',     /*Hepatitis*/
'J10'-'J10XX','J171','J120'-'J12XX',    /*viral pneumonia and influenza*/
'C00'-'C14XX',     /*neoplasms - lip,oral and pharynx*/
'C15'-'C15XX',     /*neoplasm - Oesophagus*/
'C16'-'C16XX',     /*neoplasm - stomach*/
'F10'-'F10XX','I426','K292','K70'-'K70XX',    /*Alcohol related disease*/
'F11'-'F16XX','F18'-'F19XX',    /*Illicit drug use disorders*/
'I26'-'I26XX','I802',    /*DVT with PE*/
'I71'-'I71XX',     /*Aortic aneurysm*/
```

```
'K73'-'K73XX','K74'-'K74XX',    /*Chronic liver disease, excl Alcohol*/
'V01'-'V04XX','V06'-'V06XX','V09'-'V80XX','V87'-'V87XX','V89'-'V89XX',
 'V99'-'V99XX',    /*RTC, other transport injuries*/
'X40'-'X49XX',     /*Accidental poisonings*/
'W00'-'W19XX',     /*Falls*/
'X00'-'X09XX',     /*Fires, burns*/
'W65'-'W74XX',     /*Drownings - swimming*/
'X60'-'X84XX','Y87','Y10'-'Y34XX',    /*Suicide and self inflicted injuries*/
'X85'-'Y09XX','Y871',    /*Violence*/
'C22'-'C22XX',     /*neoplasm - liver*/
'C33'-'C34XX'      /*neoplasm - lung*/
=1
'C91'-'C95XX',     /*neoplasm - luekemia- limit to <44yrs*/
'J45'-'J46XX'      /*Asthma-  limit to <44yrs*/
=12
'J40'-'J44XX'      /*COPD-  limit to >45yrs*/
=13
'C50'-'C50XX'      /*neoplasm - breast- limit to Females*/
=14
'A15'-'A19XX','B90'-'B909X',    /*TB*/
'A38'-'A41XX','A46'-'A46XX','A481','B50'-'B54XX','G00'-'G00XX',
 'G03'-'G03XX','J020','J13'-'J15XX',
'J18'-'J18XX','L03'-'L03XX',    /*Bacterial infection*/
'C18'-'C21XX',     /*neoplasm - colorectal*/
'C43'-'C43XX',     /*neoplasm - melanona of skin*/
'C44'-'C44XX',     /*neoplasm - nonmelanotic skin*/
'C54'-'C55XX',     /*neoplasm - uterus*/
'C53'-'C53XX',     /*neoplasm - cervix*/
'C67'-'C67XX',     /*neoplasm - bladder*/
'C73'-'C73XX',     /*neoplasm - thyroid*/
'C81'-'C81XX',     /*neoplasm - hodgkins disease*/
'D10'-'D36XX',     /*neoplasm - benign*/
'E00'-'E07XX',     /*Thyroid disorders*/
'G40'-'G41XX',     /*Epilepsy*/
'I01'-'I09XX',     /*Rheumatic and valvular heart disease*/
'I11'-'I11XX',     /*Hypertensive disease*/
'I12'-'I13XX','N00'-'N09XX','N17'-'N19XX',    /*Nephritis and nephrosis*/
'N13'-'N13XX','N20'-'N21XX','N35'-'N35XX','N40'-'N40XX','N991',
                   /*Obstructive uropathy and prostatic hyperplasia*/
'K25'-'K28XX',     /*Peptic ulcer disease*/
'K35'-'K38XX','K40'-'K46XX','K80'-'K83XX','K85'-'K86XX','K915',
                   /*Acute abdomen,appendix,intestinal obstruction, cholycystitis,
                     pancreatitis, hernia*/
'H311','P00'-'P00XX','P04'-'P04XX','Q00'-'Q99XX',    /*Birth defect*/
'P03'-'P03XX','P05'-'P95XX'    /*Complications of perinatal period*/
=5
'E10'-'E14XX',     /*Diabetes*/
'I20'-'I25XX',     /*IHD*/
'I60'-'I69XX'      /*CVD*/
=6
other=0;
```

VAR: AnyAV	**Avoidable Mortality Flag (First Version)**	**1981,1986,1991,1996**
VAR: AnyAv	**Avoidable Mortality Flag**	**2001**

Note: Interim Avoidable mortality flag 26/8/2003 for 81,86,91 & 96
This is the version of the variable in the datalab using informat iavmrt.
New version for 2001 used informat i10avmrt. (now i10av.)
2001 version includes intermediatory codes for deciding Amenable variable
2001 version final variable just has values 0, 1 and 3.
Code 3 technically non-avoidable but we will investigate further in datalab

Format: fAnyAv

```
  0='Non-Avoidable Mortality'                          1='Avoidable Mortality'
  3='Avoidable Mortality >= 75'                        5='Amenable'
  6='50% of deaths randomly assigned as amenable'     12='<45'
 13='=<45'                                            14='Females';
```

Note: Final Avoidable Mortality Flag 9/12/2003
This is the version we should have had if it had been ready in time.
We can manipulate the other variable to almost get these groupings

inFormat: inavmrt

```
 '010'-'018XX','137'-'137XX','042'-'042XX','480'-'480XX','487'-'487XX','070'-'070XX',
 '034'-'036XX','038'-'038XX','084'-'084XX','320'-'320XX',
 '481'-'481XX','482'-'482XX','485'-'485XX','681'-'681XX','682'-'682XX',
 '764'-'779XX','740'-'759XX','250'-'250XX','240'-'242XX','244'-'244XX',
 '201'-'201XX','140'-'149XX','150'-'150XX','151'-'151XX','153'-'153XX','154'-'154XX',
 '155'-'155XX','162'-'162XX','172'-'172XX','173'-'173XX',
 '174'-'174XX','180'-'180XX','182'-'182XX','179'-'179XX','188'-'188XX','193'-'193XX',
 '204'-'204XX','345'-'345XX','292'-'292XX','304'-'304XX','3052'-'3059X',
 '410'-'414XX','430'-'438XX','390'-'398XX','402'-'402XX','441'-'441XX',
 '493'-'493XX','490'-'492XX','496'-'496XX','531'-'534XX','571'-'571XX',
 '574'-'576XX','540'-'543XX','810'-'819XX','910'-'910XX','850'-'869XX',
 '880'-'886XX','888'-'888XX','890'-'899XX','950'-'959XX','980'-'989XX','960'-'969XX',
 '210'-'229XX',
 '291'-'291XX','303'-'303XX','3050'-'3050X','4255'-'4255X','5353'-'5353X',
 '580'-'589XX','403'-'403XX','592'-'592XX',
 '5937'-'5937X','594'-'594XX','598'-'598XX','5996'-'5996X','600'-'600XX'=1
 '243'-'243XX','245'-'246XX','205'-'205XX','206'-'206XX','207'-'207XX','208'-'208XX',
 '2791'-'2791X','7608'-'7608X','591'-'591XX','4151'-'4151X','4511'-'4511X',
 '577'-'577XX','550'-'553XX'=1
/*Plus grouping this small group as avoidable for confidentiality reasons*/
 '999X'=1
 '4952','4959','970X','97008','97009'=1
other=0;
```

Note: Health System Flag 9/12/2003
Not currently in Datalab but we can obtain almost these groupings if required

inFormat: ihsys

```
 '010'-'018XX','137'-'137XX','034'-'036XX','038'-'038XX','084'-'084XX','320'-'320XX',
 '481'-'481XX','482'-'482XX','485'-'485XX','681'-'681XX','682'-'682XX','764'-'779XX',
 '740'-'759XX','240'-'242XX','244'-'244XX','201'-'201XX','153'-'153XX','154'-'154XX',
 '172'-'172XX','173'-'173XX','180'-'180XX','182'-'182XX','179'-'179XX','188'-'188XX',
 '193'-'193XX','345'-'345XX','390'-'398XX','402'-'402XX','531'-'534XX',
 '574'-'576XX','540'-'543XX','210'-'229XX','580'-'589XX','403'-'403XX','592'-'592XX',
 '5937'-'5937X','594'-'594XX','598'-'598XX','5996'-'5996X','600'-'600XX'=1
 '243'-'243XX','245'-'246XX','591'-'591XX','577'-'577XX','550'-'553XX'=1
 '250'-'250XX','410'-'414XX','430'-'438XX'=2
 '174'-'174XX'=3
 '204'-'204XX','493'-'493XX','205'-'205XX','206'-'206XX','207'-'207XX','208'-'208XX'=4
 '490'-'492XX','496'-'496XX'=5
other=0;
```

Note: Labels for Health System Flag 9/12/2003
Not currently in Datalab but would work out Health System groupings from these values

Format: fhsys

```
 0='Non-Health'          1='Health System'       2='Half these deaths'
 3='Females only'        4='<44 years'           5='>45 years';
```

VAR: AmenMort	Amenable Mortality Flag	2001

Note: Amenable to Health System Mortality Flag created from informat i10av. (for avoidable mortality)
Final variable needs random allocation of 50% of deaths to amenable for codes 2 & 4. Code 3 technically non-amenable but we will investigate further in datalab

Format: fAmen

```
0='Non-amenable mortality'                    1='Amenable mortality'
2='50% deaths assigned as amenable'           3='Amenable >=75yr'
4='50% deaths >=75yr assigned as amenable'
5='Correcting Amenable 25% deaths as amenable';
```

VAR: CauseDeath	Cause of Death (4 groups)	1981,1986,1991,1996

Format: f4dth

```
1='Cancer'      2='CVD'      3='Injury inc Sui&Int'      4='Other Causes'
.='Not Dead/Linked';
```

SEASON OF DEATH FORMATS

VAR: SeasDth	Season at Death	1981,1986,1991,1996,2001

Format: fseason

```
1='Summer'      2='Autumn'      3='Winter'      4='Spring'      .='Missing';
```

Month of Death grouped into Seasons to form SeasDth	1981,1986,1991,1996

inFormat: iseason

```
0,1,2,12,13,14,24,25,26,36=2          3,4,5,15,16,17,27,28,29=3
6,7,8,18,19,20,30,31,32=4             9,10,11,21,22,23,33,34,35=1
other=.;
```

Used on SNZ supplied variable to form SeasDth	2001

inFormat: iseas

```
'Sum'=1      'Aut'=2      'Win'=3      'Spr'=4      other=.;
```

VAR: PostAUIn	Post Census Hospitalisation Indicator	1991,1996

Format: fPostC

```
0='Not Hospitalised Post-Census'      1='Hospitalised Post-Census'
.='Not Applicable';
```

VAR: PreAUIn	Pre Census Hospitalisation Indicator	1991,1996

Format: fPreC

```
0='Not Hospitalised Pre-Census'      1='Hospitalised Pre-Census'
.='Not Applicable';
```

DISABILITY FORMATS

VAR: DisCode	Long-Term Disability or Handicap	1996

Format: fDisCd

```
1='Have Disability'      2='No Disability'      .,9='Not Specified';
```

VAR: DisInd	Disability Indicator (from HealthProb & DisCode)	1996

Format: fDisIn

```
0='No Disability Indicated'          1='Disability Indicated'
.,9='Not Specified';
```

HEALTH PROBLEMS FORMATS

VAR: HealthProb	Health Problems	1996

Format: fHProb

```
  0='No Specified Health Problems'          1='Specified Health Problems'
 .,9='Not Specified';
```

VAR: HealthProb_A	Health Problem 1	1996
VAR: HealthProb_B	Health Problem 2	1996
VAR: HealthProb_C	Health Problem 3	1996

Format: fHProbD

```
  1='Had difficulties with everyday activities that people your age can usually do'
  2='Had difficulties with communicating, mixing with others or socialising'
  3='Had difficulties with any other activity that people your age can usually do'
 .,9='Did not have difficulties doing task';
```

IV.2. Variables included in the bias file

Table 54: Description of Variables in the 2001-04 Bias file

Variable	Format	Label
AgeC_yrs		Age at Census (years)
AgeC_mths		Age at Census (months)
AgeD_mths		Age at Death (months)
DHB_m	$2.	District Health Board 2001 (Mortality)
Eth_A_Mort	FEETH.	Asian recorded on Mortality [.,0,4]
Eth_A_NHI	FEETH.	Asian recorded on NHI [.,0,4]
Eth_E_Mort	FEETH.	NZ European/Pakeha recorded on Mortality [.,0,6]
Eth_E_NHI	FEETH.	NZ European/Pakeha recorded on NHI [.,0,6]
Eth_M_Mort	FEETH.	NZ Maori recorded on Mortality [.,0,1]
Eth_M_NHI	FEETH.	NZ Maori recorded on NHI [.,0,1]
Eth_O_Mort	FEETH.	nonMaori nonPacific nonAsian recorded on Mortality [.,0,5]
Eth_O_NHI	FEETH.	nonMaori nonPacific nonAsian recorded on NHI [.,0,5]
Eth_P_Mort	FEETH.	Pacific recorded on Mortality [.,0,2]
Eth_P_NHI	FEETH.	Pacific recorded on NHI [.,0,2]
EthnicG1_m	$2.	Detailed Ethnicity Option 1 (Mortality)
EthnicG2_m	$2.	Detailed Ethnicity Option 2 (Mortality)
EthnicG3_m	$2.	Detailed Ethnicity Option 3 (Mortality)
EthnicGp_m		Detailed Ethnicity Prioritised (Mortality)
flag		In Unlock Dataset Flag
G_Rurality	F6RUR.	Rurality Indicator
G_URProfile	FURPRO.	Usual Residence Profile
id_bias	$8.	Unique Bias ID
ICD10	$7.	ICD10 Underlying Cause of Death
ICD_Gp	$FNICD.	Underlying Cause of Death
Link	FLINK.	Matched
MobilityGp		AU Mobility Indicator (% of AU moved since 5 years ago)
NZDep2001_m	FDEPS.	NZ 2001 Deprivation Deciles (Mortality)
pass	FPASS.	Linkage Pass
RC_m	$2.	Regional Council 2001 (Mortality)
RHA	FRHA.	Regional Health Authority
Sex_mort	FVSEX.	Sex (Mortality)
sf01_fdec		2001 full socfrag decile
TLA95_m	F95TLA.	Territorial Local Authority (mortality)
W_Base		Base Linkage Weight
W_AgEthAdj		Ethnicity Scaled Weight

Table 55: Linked, Actual and Weighted Deaths by Territorial Local Authority

Territorial Local Authority	Linked Deaths	Actual Deaths	Weighted deaths (weight=W_Base)	Weighted deaths (weight=W_AgEthAdj)
Far North	1,025	1,395	1,311	1,302
Whangarei	1,518	1,869	1,899	1,890
Kaipara	370	453	450	447
Rodney	1,397	1,689	1,713	1,704
North Shore	2,659	3,252	3,285	3,270
Waitakere	2,090	2,616	2,622	2,607
Auckland	5,633	7,011	7,047	7,011
Manukau	3,514	4,554	4,485	4,452
Papakura	654	828	828	822
Franklin	688	882	870	864
Thames Coromandel	648	780	780	780
Hauraki	357	429	429	429
Waikato	671	807	831	825
Matamata-Piako	536	663	648	645
Hamilton	1,768	2,148	2,178	2,169
Waipa	788	978	963	960
Otorohanga	118	144	153	150
South Waikato	348	420	429	426
Waitomo	174	216	216	216
Taupo	542	687	678	675
Western Bay of Plenty	746	933	915	912
Tauranga	2,029	2,514	2,478	2,466
Rotorua	1,175	1,464	1,458	1,449
Whakatane	612	732	768	765
Kawerau	105	120	126	126
Opotiki	181	231	234	231
Gisborne	921	1,173	1,143	1,137
Wairoa	197	249	246	243
Hastings	1,406	1,707	1,722	1,710
Napier	1,261	1,518	1,521	1,518
Central Hawkes Bay	254	306	315	312
New Plymouth	1,501	1,770	1,803	1,797
Stratford	178	213	210	213
South Taranaki	595	693	723	717
Ruapehu	207	264	261	261
Wanganui	1,131	1,350	1,380	1,374
Rangitikei	318	390	387	384
Manawatu	504	633	615	615
Palmerston North	1,202	1,476	1,479	1,470
Tararua	388	462	474	474
Horowhenua	943	1,143	1,146	1,143
Kapiti Coast	1,052	1,419	1,275	1,272
Porirua	636	768	795	789
Upper Hutt	715	852	870	867
Lower Hutt	1,635	1,956	1,998	1,989
Wellington	2,151	2,598	2,631	2,616
Masterton	529	633	642	639
Carterton	137	159	165	165
South Wairarapa	174	219	213	213
Tasman	719	879	882	876
Nelson	877	1,074	1,065	1,062
Marlborough	888	1,077	1,074	1,071
Kaikoura	60	78	72	72
Buller	186	258	225	225
Grey	301	369	363	360
Westland	146	201	180	180

Territorial Local Authority	Linked Deaths	Actual Deaths	Weighted deaths (weight=W_Base)	Weighted deaths (weight=W_AgEthAdj)
Hurunui	143	177	177	177
Waimakariri	580	693	702	699
Christchurch	6,609	7,842	7,929	7,896
Banks Peninsula	118	144	144	144
Selwyn	234	324	300	297
Ashburton	640	768	777	771
Timaru	1,111	1,293	1,329	1,326
Mackenzie	50	63	60	60
Waimate	202	234	240	240
Chatham Islands	8	9	12	12
Waitaki	611	720	729	729
Central Otago	331	387	402	399
Queenstown-Lakes	187	243	225	222
Dunedin	2,480	2,976	2,976	2,964
Clutha	311	378	378	375
Southland	384	480	474	471
Gore	298	363	357	357
Invercargill	1,272	1,545	1,518	1,512

Table 56: Linked, Actual and Weighted Deaths by Regional Council

Regional Council	Linked Deaths	Actual Deaths	Weighted deaths (weight=W_Base)	Weighted deaths (weight=W_AgEthAdj)
Northland Region	2,910	3,714	3,657	3,636
Auckland Region	16,514	20,658	20,676	20,568
Waikato Region	6,103	7,482	7,503	7,461
Bay of Plenty Region	4,831	5,973	5,952	5,922
Gisborne Region	921	1,173	1,143	1,137
Hawke's Bay Region	3,118	3,780	3,804	3,786
Taranaki Region	2,271	2,673	2,736	2,724
Manawatu-Wanganui Region	4,699	5,724	5,751	5,724
Wellington Region	7,026	8,601	8,595	8,550
West Coast Region	636	831	768	765
Canterbury Region	9,788	11,664	11,775	11,724
Otago Region	3,887	4,665	4,665	4,644
Southland Region	1,954	2,388	2,349	2,340
Tasman Region	719	879	882	876
Nelson Region	880	1,077	1,065	1,059
Marlborough Region	888	1,077	1,074	1,071

Table 57: Linked, Actual and Weighted Deaths by District Health Board

District Health Board	Linked Deaths	Actual Deaths	Weighted deaths (weight=W_Base)	Weighted deaths (weight=W_AgEthAdj)
Northland	2,910	3,714	3,657	3,636
Waitemata	6,149	7,560	7,617	7,581
Auckland	5,636	7,014	7,047	7,011
Counties Manukau	4,859	6,267	6,183	6,144
Waikato	5,567	6,786	6,828	6,792
Lakes	1,717	2,151	2,136	2,124
Bay of Plenty	3,679	4,536	4,521	4,497
Tairawhiti	921	1,173	1,146	1,137
Taranaki	2,274	2,676	2,742	2,727
Hawke's Bay	3,129	3,792	3,816	3,798
Whanganui	1,494	1,800	1,830	1,824
Midcentral	3,252	3,969	3,972	3,957
Hutt	2,350	2,808	2,868	2,856

District Health Board	Linked Deaths	Actual Deaths	Weighted deaths (weight=W_Base)	Weighted deaths (weight=W_AgEthAdj)
Capital and Coast	3,627	4,533	4,443	4,422
Wairarapa	837	1,008	1,023	1,017
Nelson Marlborough	2,481	3,027	3,018	3,009
West Coast	633	828	768	765
Canterbury	8,386	10,029	10,101	10,056
South Canterbury	1,363	1,590	1,632	1,626
Otago	3,820	4,572	4,581	4,563
Southland	2,060	2,526	2,475	2,463

IV.3. Variables included in the unlock file

Table 58: Description of Variables in the unlock file

Variable	Format	Label
AgeC_yrs		Age at Census (years)
AgeC_mths		Age at Census (months)
AgeD_mths		Age at Death (months)
bcountry_mort		Country of Birth Group (Mortality)
cob_cen		Country of Birth Group (Census)
DHB_m	$2.	District Health Board 2001 (Mortality)
Eth_A_Mort	FEETH.	Asian recorded on Mortality [.,0,4]
Eth_A_NHI	FEETH.	Asian recorded on NHI [.,0,4]
Eth_E_Mort	FEETH.	NZ European/Pakeha recorded on Mortality [.,0,6]
Eth_E_NHI	FEETH.	NZ European/Pakeha recorded on NHI [.,0,6]
Eth_M_Mort	FEETH.	NZ Maori recorded on Mortality [.,0,1]
Eth_M_NHI	FEETH.	NZ Maori recorded on NHI [.,0,1]
Eth_O_Mort	FEETH.	nonMaori nonPacific nonAsian recorded on Mortality [.,0,5]
Eth_O_NHI	FEETH.	nonMaori nonPacific nonAsian recorded on NHI [.,0,5]
Eth_P_Mort	FEETH.	Pacific recorded on Mortality [.,0,2]
Eth_P_NHI	FEETH.	Pacific recorded on NHI [.,0,2]
eth_asian_cen	FEETH.	Asian recorded on Census [.,0,4]
eth_nonmpa_cen	FEETH.	nonMaori nonPacific nonAsian recorded on Census [.,0,5]
eth_nzmaori_cen	FEETH.	NZ Maori recorded on Census [.,0,1]
eth_pacific_cen	FEETH.	Pacific recorded on Census [.,0,2]
EthnicG1_m	$2.	Detailed Ethnicity Option 1 (Mortality)
EthnicG2_m	$2.	Detailed Ethnicity Option 2 (Mortality)
EthnicG3_m	$2.	Detailed Ethnicity Option 3 (Mortality)
EthnicGp_m		Detailed Ethnicity Prioritised (Mortality)
G_Rurality	F6RUR.	Rurality Indicator
G_TA2001	F95TLA.	Territorial Authority
G_URProfile	FURPRO.	Usual Residence Profile
ICD_Gp	$FNICD.	Underlying Cause of Death
id_unlock	$8	Unique Unlock ID
Link	FLINK.	Matched
MobilityGp		AU Mobility Indicator (% of AU moved since 5 years ago)
NZDep2001_m	FDEPS.	NZ 2001 Deprivation Deciles (Mortality)
pass	FPASS.	Linkage Pass
RC_m	$2.	Regional Council 2001 (Mortality)
RHA	FRHA.	Regional Health Authority
Sex_mort	FVSEX.	Sex (Mortality)
sex_cen	FVSEX.	Sex (Census)

sf01_fdec		2001 full socfrag decile
TLA95_m	F95TLA.	Territorial Local Authority (mortality)
W_UnlockB		Unlock Weight

IV.4. Additional ‘Unlock Ratios’

Table 59: Census by death registration form stratified by sex and age groups, 2001-04 NZCMS cohort. TOTAL ethnicity

Ethnicity	Sex	By Variable	Census Ethnicity	Census Deaths	Mortality Deaths	Census to Mortality Ratio
Total Ethnicity	Males	0-14 yrs	Maori	120	111	1.09
			Non-Maori	180	189	0.95
			Pacific	45	48	0.93
			Non-Pacific	255	255	1.01
			Asian	12	15	0.98
			Non-Asian	288	288	1.00
			NonMPA	198	171	1.15
			Maori/Pacific/Asian	102	129	0.80
		15-24 yrs	Maori	324	333	0.97
			Non-Maori	873	864	1.01
			Pacific	126	114	1.09
			Non-Pacific	1,074	1,086	0.99
			Asian	63	54	1.19
			Non-Asian	1,137	1,146	0.99
			NonMPA	852	783	1.08
			Maori/Pacific/Asian	348	414	0.84
		25-44 yrs	Maori	468	477	0.98
			Non-Maori	1,338	1,326	1.01
			Pacific	138	132	1.05
			Non-Pacific	1,665	1,671	1.00
			Asian	57	51	1.13
			Non-Asian	1,746	1,752	1.00
			NonMPA	1,263	1,194	1.06
			Maori/Pacific/Asian	537	609	0.89
		45-64 yrs	Maori	1,470	1,482	0.99
			Non-Maori	5,883	5,871	1.00
			Pacific	432	426	1.02
			Non-Pacific	6,918	6,927	1.00
			Asian	177	159	1.11
			Non-Asian	7,176	7,194	1.00
			NonMPA	5,553	5,385	1.03
			Maori/Pacific/Asian	1,797	1,968	0.91
		65-74 yrs	Maori	1,020	1,026	0.99
			Non-Maori	8,109	8,100	1.00
			Pacific	318	321	0.99
			Non-Pacific	8,808	8,805	1.00
			Asian	168	168	0.99
			Non-Asian	8,958	8,958	1.00

Ethnicity	Sex	By Variable	Census Ethnicity	Census Deaths	Mortality Deaths	Census to Mortality Ratio
			NonMPA	7,797	7,707	1.01
			Maori/Pacific/Asian	1,329	1,416	0.94
		75-84 yrs	Maori	540	543	0.99
			Non-Maori	12,612	12,609	1.00
			Pacific	234	258	0.91
			Non-Pacific	12,918	12,894	1.00
			Asian	150	141	1.05
			Non-Asian	13,002	13,011	1.00
			NonMPA	12,363	12,291	1.01
			Maori/Pacific/Asian	789	861	0.91
		85+ yrs	Maori	150	165	0.92
			Non-Maori	8,067	8,055	1.00
			Pacific	69	72	0.96
			Non-Pacific	8,148	8,148	1.00
			Asian	54	54	1.00
			Non-Asian	8,166	8,169	1.00
			NonMPA	8,010	7,962	1.01
			Maori/Pacific/Asian	210	258	0.82
	Females	0-14 yrs	Maori	72	75	0.95
			Non-Maori	150	144	1.03
			Pacific	18	15	1.33
			Non-Pacific	201	207	0.98
			Asian	9	6	0.80
			Non-Asian	216	213	1.01
			NonMPA	156	138	1.13
			Maori/Pacific/Asian	66	84	0.79
		15-24 yrs	Maori	153	162	0.96
			Non-Maori	315	309	1.02
			Pacific	48	42	1.11
			Non-Pacific	423	429	0.99
			Asian	27	24	1.08
			Non-Asian	447	447	1.00
			NonMPA	312	273	1.13
			Maori/Pacific/Asian	159	195	0.82
		25-44 yrs	Maori	315	315	1.01
			Non-Maori	864	867	1.00
			Pacific	99	102	0.97
			Non-Pacific	1,086	1,080	1.00
			Asian	54	51	1.06
			Non-Asian	1,128	1,131	1.00
			NonMPA	801	753	1.06
			Maori/Pacific/Asian	381	429	0.89
		45-64 yrs	Maori	1,119	1,158	0.97
			Non-Maori	4,008	3,972	1.01

Ethnicity	Sex	By Variable	Census Ethnicity	Census Deaths	Mortality Deaths	Census to Mortality Ratio
			Pacific	297	300	0.99
			Non-Pacific	4,827	4,827	1.00
			Asian	102	99	1.05
			Non-Asian	5,022	5,031	1.00
			NonMPA	3,795	3,666	1.04
			Maori/Pacific/Asian	1,332	1,464	0.91
		65-74 yrs	Maori	846	870	0.97
			Non-Maori	5,262	5,235	1.00
			Pacific	240	255	0.94
			Non-Pacific	5,868	5,850	1.00
			Asian	111	117	0.97
			Non-Asian	5,994	5,991	1.00
			NonMPA	5,052	4,941	1.02
			Maori/Pacific/Asian	1,053	1,167	0.90
		75-84 yrs	Maori	558	546	1.02
			Non-Maori	11,811	11,826	1.00
			Pacific	246	264	0.93
			Non-Pacific	12,123	12,105	1.00
			Asian	144	153	0.95
			Non-Asian	12,222	12,216	1.00
			NonMPA	11,571	11,484	1.01
			Maori/Pacific/Asian	798	885	0.90
		85+ yrs	Maori	258	273	0.94
			Non-Maori	15,513	15,498	1.00
			Pacific	135	141	0.95
			Non-Pacific	15,636	15,630	1.00
			Asian	105	120	0.86
			Non-Asian	15,669	15,651	1.00
			NonMPA	15,360	15,297	1.00
			Maori/Pacific/Asian	411	474	0.87

Table 60: Census by death registration form stratified by sex and age groups, 2001-04 NZCMS cohort. PRIORITISED ethnic groups

			Death registration form Prioritised Ethnicity					
			Maori	Pacific	Asian	NonMPA	Total	
Sex	By Variable	Census Prioritised Ethnicity	Deaths	Deaths	Deaths	Deaths	Deaths	Census to Mortality Ratio
Males	0-14 yrs	Maori	105	.	.	15	120	1.09
		Pacific	.	33	.	.	33	0.92
		Asian	.	6	9	6	12	1.16
		NonMPA	6	6	6	126	138	0.94
		Total	*111*	*36*	*9*	*144*	.	.
	15-24 yrs	Maori	270	6	.	54	324	0.97
		Pacific	9	90	.	12	108	1.12

			Death registration form Prioritised Ethnicity					
			Maori	Pacific	Asian	NonMPA	Total	
Sex	By Variable	Census Prioritised Ethnicity	Deaths	Deaths	Deaths	Deaths	Deaths	Census to Mortality Ratio
		Asian	.	6	45	6	54	1.23
		NonMPA	57	6	.	651	708	0.98
		Total	*333*	*99*	*48*	*720*	.	.
	25-44 yrs	Maori	411	.	.	54	468	0.98
		Pacific	6	123	.	9	132	1.06
		Asian	.	6	48	6	57	1.10
		NonMPA	63	.	.	1,083	1,146	1.00
		Total	*477*	*126*	*51*	*1,152*	.	.
	45-64 yrs	Maori	1,341	6	6	126	1,470	0.99
		Pacific	6	402	.	12	417	0.99
		Asian	.	9	144	9	162	1.10
		NonMPA	135	9	6	5,154	5,298	1.00
		Total	*1,482*	*420*	*150*	*5,301*	.	.
	65-74 yrs	Maori	921	.	.	99	1,020	0.99
		Pacific	6	306	6	6	315	0.98
		Asian	.	6	150	6	156	0.96
		NonMPA	102	12	12	7,512	7,635	1.00
		Total	*1,026*	*324*	*165*	*7,614*	.	.
	75-84 yrs	Maori	453	6	.	81	540	0.99
		Pacific	6	222	6	9	234	0.91
		Asian	.	9	123	12	144	1.07
		NonMPA	90	27	12	12,111	12,234	1.00
		Total	*543*	*255*	*135*	*12,216*	.	.
	85+ yrs	Maori	123	.	.	30	150	0.92
		Pacific	.	66	.	6	72	0.96
		Asian	.	.	45	6	51	0.94
		NonMPA	45	6	9	7,890	7,950	1.00
		Total	*165*	*72*	*54*	*7,929*	.	.
Females	0-14 yrs	Maori	63	.	.	9	72	0.95
		Pacific	6	12	.	6	15	1.19
		Asian	.	.	9	.	6	1.00
		NonMPA	12	.	.	117	129	1.01
		Total	*75*	*12*	*6*	*129*	.	.
	15-24 yrs	Maori	141	6	.	9	153	0.96
		Pacific	6	36	.	6	42	1.05
		Asian	.	6	18	6	21	1.20
		NonMPA	15	6	.	234	249	1.00
		Total	*162*	*42*	*18*	*249*	.	.
	25-44 yrs	Maori	285	6	.	27	315	1.01
		Pacific	6	84	.	6	90	0.95
		Asian	6	6	45	.	48	1.00
		NonMPA	24	6	6	690	726	1.00
		Total	*315*	*96*	*48*	*723*	.	.
	45-64 yrs	Maori	1,047	6	.	69	1,119	0.97
		Pacific	6	282	6	6	294	1.00
		Asian	.	6	87	6	99	1.04
		NonMPA	105	6	6	3,498	3,615	1.01
		Total	*1,158*	*297*	*96*	*3,579*	.	.
	65-74 yrs	Maori	783	6	.	60	846	0.97

			Death registration form Prioritised Ethnicity					
			Maori	Pacific	Asian	NonMPA	Total	
Sex	By Variable	Census Prioritised Ethnicity	Deaths	Deaths	Deaths	Deaths	Deaths	Census to Mortality Ratio
		Pacific	6	231	.	6	237	0.94
		Asian	.	6	102	6	111	1.00
		NonMPA	87	15	9	4,800	4,911	1.01
		Total	*870*	*252*	*114*	*4,869*	.	.
	75-84 yrs	Maori	474	6	.	84	558	1.02
		Pacific	.	237	6	6	243	0.92
		Asian	.	.	135	6	141	0.93
		NonMPA	72	24	15	11,316	11,427	1.00
		Total	*546*	*264*	*150*	*11,409*	.	.
	85+ yrs	Maori	207	.	.	51	258	0.94
		Pacific	.	123	.	6	132	0.94
		Asian	.	.	96	6	105	0.87
		NonMPA	66	15	21	15,171	15,276	1.00
		Total	*273*	*141*	*120*	*15,237*	.	.

Table 61: Census by death registration form stratified by sex and age groups, 2001-04 NZCMS cohort. SOLE ethnic groups

			Death registration form Sole Ethnicity					
			Maori	Pacific	Asian	Remainder	Total	
Sex	By Variable	Census Sole Ethnicity	Deaths	Deaths	Deaths	Deaths	Deaths	Census to Mortality Ratio
Males	0-14 yrs	Maori	60	.	.	6	60	0.70
		Pacific	.	27	.	6	33	1.05
		Asian	.	.	6	6	6	0.71
		Remainder	27	6	6	174	207	1.14
		Total	*87*	*30*	*6*	*180*	.	.
	15-24 yrs	Maori	174	.	.	24	198	0.71
		Pacific	.	63	.	21	84	1.19
		Asian	.	6	42	9	54	1.17
		Remainder	105	6	6	750	861	1.07
		Total	*276*	*69*	*45*	*804*	.	.
	25-44 yrs	Maori	330	.	.	27	357	0.82
		Pacific	6	114	.	9	126	1.09
		Asian	.	.	45	6	48	1.04
		Remainder	105	6	.	1,164	1,269	1.05
		Total	*435*	*114*	*48*	*1,206*	.	.
	45-64 yrs	Maori	1,152	.	.	72	1,224	0.87
		Pacific	6	378	.	15	396	0.99
		Asian	.	6	141	12	156	1.09
		Remainder	255	18	6	5,295	5,577	1.03
		Total	*1,410*	*402*	*144*	*5,397*	.	.
	65-74 yrs	Maori	801	.	.	66	867	0.91
		Pacific	6	291	6	6	297	0.98
		Asian	.	6	147	6	156	0.99
		Remainder	147	15	9	7,641	7,809	1.01
		Total	*948*	*306*	*156*	*7,713*	.	.
	75-84 yrs	Maori	393	6	.	42	435	0.89

			Death registration form Sole Ethnicity					
			Maori	Pacific	Asian	Remainder	Total	
Sex	By Variable	Census Sole Ethnicity	Deaths	Deaths	Deaths	Deaths	Deaths	Census to Mortality Ratio
		Pacific	.	204	6	12	216	0.90
		Asian	.	6	114	18	132	1.04
		Remainder	99	30	12	12,228	12,369	1.01
		Total	*489*	*237*	*126*	*12,300*	.	.
	85+ yrs	Maori	96	.	.	12	105	0.72
		Pacific	.	60	.	6	60	0.89
		Asian	.	.	36	6	39	0.99
		Remainder	54	9	6	7,947	8,013	1.01
		Total	*147*	*69*	*39*	*7,965*	.	.
Females	0-14 yrs	Maori	42	.	.	6	48	0.75
		Pacific	.	12	.	.	12	1.00
		Asian	.	.	6	6	6	1.25
		Remainder	21	.	.	135	156	1.10
		Total	*63*	*12*	*6*	*141*	.	.
	15-24 yrs	Maori	90	6	.	6	99	0.70
		Pacific	6	24	.	6	36	1.20
		Asian	.	.	21	6	21	1.12
		Remainder	45	6	.	267	315	1.12
		Total	*141*	*30*	*18*	*282*	.	.
	25-44 yrs	Maori	225	6	.	15	243	0.84
		Pacific	6	78	.	6	87	0.96
		Asian	.	6	42	6	45	1.01
		Remainder	60	9	6	738	810	1.07
		Total	*291*	*90*	*45*	*759*	.	.
	45-64 yrs	Maori	900	.	.	57	957	0.89
		Pacific	6	267	6	6	276	0.95
		Asian	.	6	84	9	93	1.04
		Remainder	177	18	6	3,603	3,804	1.04
		Total	*1,080*	*291*	*90*	*3,672*	.	.
	65-74 yrs	Maori	681	6	.	33	720	0.89
		Pacific	.	216	.	6	222	0.93
		Asian	.	6	96	12	111	1.03
		Remainder	129	18	9	4,893	5,055	1.02
		Total	*813*	*240*	*108*	*4,947*	.	.
	75-84 yrs	Maori	384	.	.	51	435	0.89
		Pacific	.	222	6	6	225	0.90
		Asian	.	.	126	6	132	0.91
		Remainder	105	30	18	11,427	11,580	1.01
		Total	*489*	*249*	*144*	*11,484*	.	.
	85+ yrs	Maori	162	.	.	27	186	0.81
		Pacific	.	114	.	12	123	0.95
		Asian	.	.	93	6	99	0.89
		Remainder	69	21	18	15,255	15,363	1.00
		Total	*231*	*132*	*111*	*15,300*	.	.

Table 62: Census by NHI registration form ethnic group and sex and age group, 2001-04 NZCMS cohort, TOTAL ethnicity

Ethnicity	Sex	By Variable	Census Ethnicity	Census Deaths	NHI Deaths	Census to NHI Ratio
Total Ethnicity	Males	0-14 yrs	Maori	120	102	1.17
			Non-Maori	180	195	0.91
			Pacific	45	39	1.12
			Non-Pacific	258	264	0.98
			Asian	12	9	1.46
			Non-Asian	288	294	0.99
			NonMPA	198	180	1.11
			Maori/Pacific/Asian	102	123	0.84
		15-24 yrs	Maori	324	276	1.19
			Non-Maori	870	924	0.94
			Pacific	123	87	1.46
			Non-Pacific	1,074	1,113	0.96
			Asian	63	39	1.55
			Non-Asian	1,134	1,158	0.98
			NonMPA	852	828	1.03
			Maori/Pacific/Asian	345	372	0.94
		25-44 yrs	Maori	468	402	1.17
			Non-Maori	1,338	1,404	0.95
			Pacific	141	120	1.17
			Non-Pacific	1,665	1,683	0.99
			Asian	60	36	1.59
			Non-Asian	1,746	1,767	0.99
			NonMPA	1,263	1,284	0.98
			Maori/Pacific/Asian	540	519	1.04
		45-64 yrs	Maori	1,470	1,281	1.15
			Non-Maori	5,883	6,072	0.97
			Pacific	435	378	1.15
			Non-Pacific	6,921	6,975	0.99
			Asian	177	138	1.30
			Non-Asian	7,173	7,215	0.99
			NonMPA	5,553	5,631	0.99
			Maori/Pacific/Asian	1,797	1,722	1.05
		65-74 yrs	Maori	1,020	900	1.13
			Non-Maori	8,106	8,226	0.99
			Pacific	318	282	1.12
			Non-Pacific	8,808	8,844	1.00
			Asian	168	150	1.13
			Non-Asian	8,958	8,976	1.00
			NonMPA	7,797	7,848	0.99
			Maori/Pacific/Asian	1,326	1,278	1.04
		75-84 yrs	Maori	537	480	1.13
			Non-Maori	12,612	12,675	1.00

Ethnicity	Sex	By Variable	Census Ethnicity	Census Deaths	NHI Deaths	Census to NHI Ratio
			Pacific	237	222	1.05
			Non-Pacific	12,915	12,927	1.00
			Asian	150	117	1.27
			Non-Asian	13,002	13,035	1.00
			NonMPA	12,363	12,378	1.00
			Maori/Pacific/Asian	789	774	1.02
		85+ yrs	Maori	150	129	1.18
			Non-Maori	8,070	8,091	1.00
			Pacific	72	63	1.14
			Non-Pacific	8,151	8,157	1.00
			Asian	54	42	1.23
			Non-Asian	8,166	8,178	1.00
			NonMPA	8,010	8,001	1.00
			Maori/Pacific/Asian	210	219	0.96
	Females	0-14 yrs	Maori	72	63	1.15
			Non-Maori	150	159	0.94
			Pacific	21	15	1.44
			Non-Pacific	204	207	0.97
			Asian	9	9	1.00
			Non-Asian	216	216	1.00
			NonMPA	153	147	1.07
			Maori/Pacific/Asian	66	78	0.87
		15-24 yrs	Maori	153	129	1.21
			Non-Maori	315	342	0.92
			Pacific	48	33	1.51
			Non-Pacific	420	438	0.96
			Asian	27	21	1.19
			Non-Asian	444	450	0.99
			NonMPA	312	306	1.02
			Maori/Pacific/Asian	159	165	0.97
		25-44 yrs	Maori	318	306	1.04
			Non-Maori	867	879	0.98
			Pacific	99	93	1.06
			Non-Pacific	1,086	1,092	1.00
			Asian	54	39	1.31
			Non-Asian	1,128	1,143	0.99
			NonMPA	801	768	1.04
			Maori/Pacific/Asian	384	417	0.92
		45-64 yrs	Maori	1,119	1,032	1.08
			Non-Maori	4,008	4,098	0.98
			Pacific	297	285	1.05
			Non-Pacific	4,827	4,845	1.00
			Asian	105	87	1.18
			Non-Asian	5,025	5,040	1.00

Ethnicity	Sex	By Variable	Census Ethnicity	Census Deaths	NHI Deaths	Census to NHI Ratio
			NonMPA	3,795	3,795	1.00
			Maori/Pacific/Asian	1,332	1,335	1.00
		65-74 yrs	Maori	846	777	1.09
			Non-Maori	5,259	5,328	0.99
			Pacific	240	228	1.05
			Non-Pacific	5,868	5,880	1.00
			Asian	111	105	1.08
			Non-Asian	5,991	6,000	1.00
			NonMPA	5,055	5,037	1.00
			Maori/Pacific/Asian	1,053	1,068	0.99
		75-84 yrs	Maori	558	477	1.17
			Non-Maori	11,811	11,889	0.99
			Pacific	246	222	1.11
			Non-Pacific	12,123	12,150	1.00
			Asian	144	126	1.16
			Non-Asian	12,222	12,246	1.00
			NonMPA	11,574	11,583	1.00
			Maori/Pacific/Asian	798	786	1.01
		85+ yrs	Maori	258	195	1.33
			Non-Maori	15,513	15,579	1.00
			Pacific	135	126	1.07
			Non-Pacific	15,636	15,645	1.00
			Asian	105	105	0.99
			Non-Asian	15,669	15,666	1.00
			NonMPA	15,360	15,369	1.00
			Maori/Pacific/Asian	408	402	1.02

Table 63: Census by NHI registration form ethnic group and sex and age group, 2001-04 NZCMS cohort, PRIORITISED ethnic groups

			NHI Prioritised Ethnicity					
			Maori	Pacific	Asian	NonMPA	Total	
Sex	By Variable	Census Prioritised Ethnicity	Deaths	Deaths	Deaths	Deaths	Deaths	Census to NHI Ratio
Males	0-14 yrs	Maori	96	6	6	21	120	1.17
		Pacific	.	27	.	6	33	1.03
		Asian	.	6	6	6	9	1.36
		NonMPA	9	6	.	129	135	0.86
		Total	*102*	*33*	*9*	*156*	.	.
	15-24 yrs	Maori	213	6	.	111	324	1.19
		Pacific	12	72	.	27	108	1.35
		Asian	.	6	36	15	54	1.49
		NonMPA	48	6	6	654	708	0.88
		Total	*276*	*81*	*39*	*807*	.	.
	25-44 yrs	Maori	348	.	.	117	468	1.17
		Pacific	6	114	.	15	132	1.13
		Asian	.	6	36	18	57	1.57

			NHI Prioritised Ethnicity					
			Maori	Pacific	Asian	NonMPA	Total	
Sex	By Variable	Census Prioritised Ethnicity	Deaths	Deaths	Deaths	Deaths	Deaths	Census to NHI Ratio
		NonMPA	45	.	.	1,101	1,149	0.92
		Total	*402*	*117*	*33*	*1,251*	.	.
	45-64 yrs	Maori	1,173	6	.	294	1,470	1.15
		Pacific	9	351	.	60	417	1.11
		Asian	.	12	120	33	165	1.32
		NonMPA	102	6	6	5,187	5,301	0.95
		Total	*1,281*	*372*	*126*	*5,571*	.	.
	65-74 yrs	Maori	831	6	.	186	1,020	1.13
		Pacific	6	270	6	39	315	1.13
		Asian	.	6	135	21	156	1.09
		NonMPA	66	6	6	7,551	7,635	0.98
		Total	*900*	*282*	*144*	*7,800*	.	.
	75-84 yrs	Maori	426	6	.	111	537	1.13
		Pacific	6	204	.	30	234	1.04
		Asian	.	6	111	30	144	1.28
		NonMPA	48	15	6	12,168	12,237	0.99
		Total	*480*	*225*	*111*	*12,336*	.	.
	85+ yrs	Maori	105	.	.	48	150	1.18
		Pacific	6	57	6	12	72	1.14
		Asian	.	6	36	9	48	1.20
		NonMPA	21	6	6	7,917	7,947	1.00
		Total	*129*	*63*	*39*	*7,989*	.	.
Females	0-14 yrs	Maori	57	6	.	15	72	1.15
		Pacific	6	12	.	6	15	1.05
		Asian	.	.	6	.	6	1.00
		NonMPA	6	.	.	123	129	0.93
		Total	*63*	*12*	*9*	*138*	.	.
	15-24 yrs	Maori	114	6	6	39	153	1.21
		Pacific	6	27	.	12	45	1.35
		Asian	.	6	18	6	21	1.19
		NonMPA	12	6	.	237	249	0.86
		Total	*129*	*33*	*18*	*291*	.	.
	25-44 yrs	Maori	267	6	6	45	318	1.04
		Pacific	9	81	.	6	90	1.05
		Asian	.	6	39	6	48	1.17
		NonMPA	27	6	6	696	723	0.97
		Total	*306*	*87*	*42*	*750*	.	.
	45-64 yrs	Maori	951	6	.	165	1,119	1.08
		Pacific	6	267	6	21	294	1.04
		Asian	.	6	81	12	99	1.15
		NonMPA	78	9	6	3,525	3,615	0.97
		Total	*1,032*	*285*	*87*	*3,726*	.	.
	65-74 yrs	Maori	717	6	.	129	846	1.09
		Pacific	6	210	.	24	237	1.05
		Asian	.	6	93	15	111	1.10
		NonMPA	54	12	9	4,833	4,908	0.98
		Total	*777*	*225*	*102*	*5,001*	.	.
	75-84 yrs	Maori	429	6	.	129	558	1.17
		Pacific	6	207	6	33	240	1.10
		Asian	.	6	108	27	141	1.14

			NHI Prioritised Ethnicity					
			Maori	Pacific	Asian	NonMPA	Total	
Sex	By Variable	Census Prioritised Ethnicity	Deaths	Deaths	Deaths	Deaths	Deaths	Census to NHI Ratio
		NonMPA	48	9	12	11,358	11,430	0.99
		Total	*477*	*219*	*123*	*11,547*	.	.
	85+ yrs	Maori	159	.	.	96	258	1.33
		Pacific	.	111	.	24	132	1.06
		Asian	.	6	87	15	102	1.01
		NonMPA	33	12	18	15,213	15,276	1.00
		Total	*195*	*126*	*102*	*15,348*	.	.

Table 64: Census by NHI registration form ethnic group and age group, 2001-04 NZCMS cohort, SOLE ethnic groups

			NHI Sole Ethnicity					
			Maori	Pacific	Asian	Remainder	Total	
Sex	By Variable	Census Sole Ethnicity	Deaths	Deaths	Deaths	Deaths	Deaths	Census to NHI Ratio
Males	0-14 yrs	Maori	60	.	.	6	60	0.74
		Pacific	.	27	.	6	30	0.99
		Asian	.	.	6	6	6	1.42
		Remainder	24	6	6	174	204	1.11
		Total	*84*	*33*	*6*	*183*	.	.
	15-24 yrs	Maori	156	.	.	45	198	0.78
		Pacific	12	63	.	12	84	1.10
		Asian	.	6	36	12	54	1.50
		Remainder	87	12	.	765	864	1.04
		Total	*252*	*78*	*36*	*834*	.	.
	25-44 yrs	Maori	291	.	.	63	360	0.97
		Pacific	6	108	.	15	126	1.14
		Asian	.	6	36	12	48	1.37
		Remainder	72	6	.	1,194	1,269	0.99
		Total	*372*	*111*	*36*	*1,287*	.	.
	45-64 yrs	Maori	1,038	6	.	183	1,224	1.00
		Pacific	6	333	.	57	396	1.11
		Asian	.	6	117	36	156	1.31
		Remainder	183	21	6	5,370	5,574	0.99
		Total	*1,227*	*357*	*120*	*5,649*	.	.
	65-74 yrs	Maori	738	6	.	129	867	1.01
		Pacific	6	255	6	39	297	1.09
		Asian	.	6	132	21	156	1.10
		Remainder	117	15	9	7,668	7,806	0.99
		Total	*858*	*273*	*141*	*7,854*	.	.
	75-84 yrs	Maori	366	6	.	66	435	0.98
		Pacific	6	192	.	21	216	1.00
		Asian	.	6	108	27	132	1.22
		Remainder	75	18	6	12,270	12,369	1.00
		Total	*447*	*216*	*108*	*12,384*	.	.
	85+ yrs	Maori	84	.	.	24	105	0.88
		Pacific	6	48	.	9	63	1.11
		Asian	.	.	33	9	39	0.96
		Remainder	33	6	9	7,965	8,016	1.00
		Total	*120*	*57*	*42*	*8,004*	.	.

			NHI Sole Ethnicity					
			Maori	Pacific	Asian	Remainder	Total	
Sex	By Variable	Census Sole Ethnicity	Deaths	Deaths	Deaths	Deaths	Deaths	Census to NHI Ratio
Females	0-14 yrs	Maori	39	.	.	6	48	0.81
		Pacific	6	9	.	.	12	0.89
		Asian	.	.	6	6	9	1.25
		Remainder	18	6	.	138	156	1.08
		Total	*57*	*15*	*6*	*144*	.	.
	15-24 yrs	Maori	72	6	.	21	99	0.85
		Pacific	6	18	.	15	36	1.27
		Asian	.	6	18	6	21	1.11
		Remainder	42	6	6	267	315	1.02
		Total	*117*	*30*	*18*	*309*	.	.
	25-44 yrs	Maori	225	.	.	18	240	0.84
		Pacific	6	75	.	6	87	0.99
		Asian	.	6	36	6	45	1.14
		Remainder	54	9	6	744	810	1.05
		Total	*285*	*84*	*39*	*771*	.	.
	45-64 yrs	Maori	822	6	.	132	960	0.99
		Pacific	6	249	6	21	273	0.99
		Asian	.	6	78	15	93	1.10
		Remainder	141	24	6	3,633	3,801	1.00
		Total	*969*	*276*	*84*	*3,798*	.	.
	65-74 yrs	Maori	633	.	.	84	717	0.96
		Pacific	6	201	.	15	225	1.02
		Asian	.	.	93	18	111	1.10
		Remainder	105	15	9	4,923	5,055	1.00
		Total	*747*	*219*	*102*	*5,043*	.	.
	75-84 yrs	Maori	360	.	.	72	435	0.97
		Pacific	6	201	6	24	225	1.05
		Asian	.	.	105	30	132	1.11
		Remainder	87	15	12	11,463	11,577	1.00
		Total	*450*	*213*	*120*	*11,586*	.	.
	85+ yrs	Maori	138	.	.	48	186	1.05
		Pacific	.	102	.	21	126	1.01
		Asian	.	6	84	12	99	0.97
		Remainder	39	21	18	15,288	15,363	1.00
		Total	*177*	*123*	*99*	*15,369*	.	.